

SOIL CONSERVATION

CLAUDE R. WICKARD
Secretary of Agriculture

HUGH H. BENNETT
Chief, Soil Conservation Service

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A NEW FARM MOVEMENT TAKES RAPID ROOT

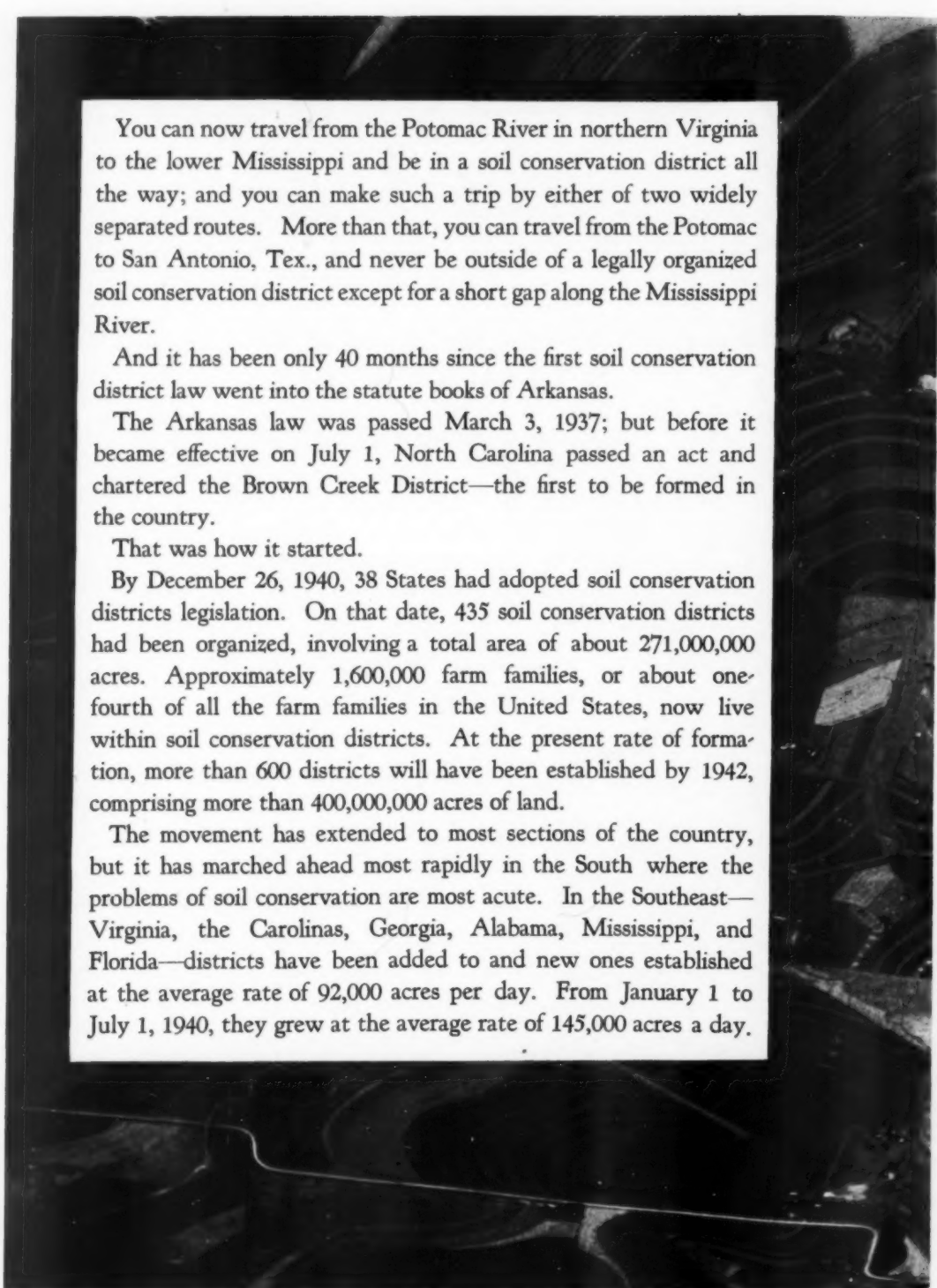


PETITION

BY H. H. BENNETT, CHIEF,
SOIL CONSERVATION SERVICE

In this introductory article, Dr. Bennett finds in decentralized activity—farmer control—the key to permanent and effective soil conservation districts

THE soil conservation districts movement is sweeping this country in a manner unprecedented in our agricultural history. There have been important movements among farm people in education, social betterment, cooperative marketing, health protection, livestock and crop improvement, and other fields. But there has been no movement comparable in speed, scope, or significance to the spread of soil conservation districts formed by landowners themselves for the defense of their own lands through their own leadership and direction.



You can now travel from the Potomac River in northern Virginia to the lower Mississippi and be in a soil conservation district all the way; and you can make such a trip by either of two widely separated routes. More than that, you can travel from the Potomac to San Antonio, Tex., and never be outside of a legally organized soil conservation district except for a short gap along the Mississippi River.

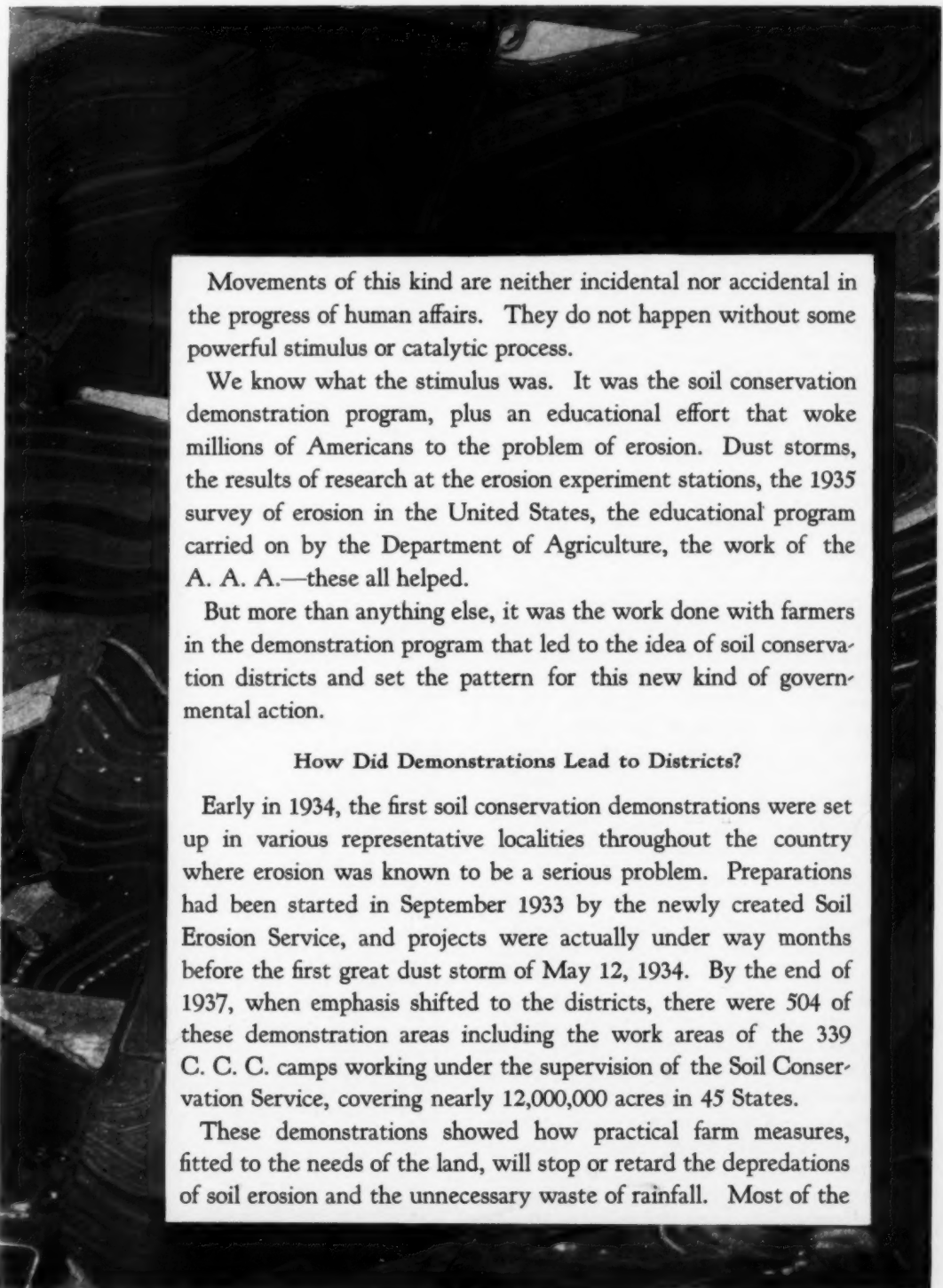
And it has been only 40 months since the first soil conservation district law went into the statute books of Arkansas.

The Arkansas law was passed March 3, 1937; but before it became effective on July 1, North Carolina passed an act and chartered the Brown Creek District—the first to be formed in the country.

That was how it started.

By December 26, 1940, 38 States had adopted soil conservation districts legislation. On that date, 435 soil conservation districts had been organized, involving a total area of about 271,000,000 acres. Approximately 1,600,000 farm families, or about one-fourth of all the farm families in the United States, now live within soil conservation districts. At the present rate of formation, more than 600 districts will have been established by 1942, comprising more than 400,000,000 acres of land.

The movement has extended to most sections of the country, but it has marched ahead most rapidly in the South where the problems of soil conservation are most acute. In the Southeast—Virginia, the Carolinas, Georgia, Alabama, Mississippi, and Florida—districts have been added to and new ones established at the average rate of 92,000 acres per day. From January 1 to July 1, 1940, they grew at the average rate of 145,000 acres a day.



Movements of this kind are neither incidental nor accidental in the progress of human affairs. They do not happen without some powerful stimulus or catalytic process.

We know what the stimulus was. It was the soil conservation demonstration program, plus an educational effort that woke millions of Americans to the problem of erosion. Dust storms, the results of research at the erosion experiment stations, the 1935 survey of erosion in the United States, the educational program carried on by the Department of Agriculture, the work of the A. A. A.—these all helped.

But more than anything else, it was the work done with farmers in the demonstration program that led to the idea of soil conservation districts and set the pattern for this new kind of governmental action.

How Did Demonstrations Lead to Districts?

Early in 1934, the first soil conservation demonstrations were set up in various representative localities throughout the country where erosion was known to be a serious problem. Preparations had been started in September 1933 by the newly created Soil Erosion Service, and projects were actually under way months before the first great dust storm of May 12, 1934. By the end of 1937, when emphasis shifted to the districts, there were 504 of these demonstration areas including the work areas of the 339 C. C. C. camps working under the supervision of the Soil Conservation Service, covering nearly 12,000,000 acres in 45 States.

These demonstrations showed how practical farm measures, fitted to the needs of the land, will stop or retard the depredations of soil erosion and the unnecessary waste of rainfall. Most of the

areas took in the whole drainage basin of one or more typical streams—all the land extending back from the stream banks across fields, pastures, and woodlands, to the upper limits of the smallest streams, and to the top of the enclosing uplands.

On the farms within these areas, control work was carried on in close cooperation with those farmers who could see their way to enter wholeheartedly into a complete program under which every acre of their land would be treated in the most effective way from the standpoint of saving soil and maintaining or increasing income.

The results generally were successful to a considerable degree, in numerous instances to a very high degree. Some measures failed to do the job they were intended to do. Those were discarded immediately and others were tried—better measures frequently were indicated by those that had failed.

Not only was erosion reduced or completely controlled, but flood heights were markedly reduced along many small streams, and some streams that had been running red or yellow or brown with flood flows charged with rich topsoil were reduced in turbidity or almost cleared up. Many actual examples could be cited.

The success of these demonstrations was immediate. As interest in them grew, farmers began to demand more and more assistance in controlling erosion, conserving water, developing wildlife, draining wet lands, controlling floods. Since the beginning of this demand in 1935, there has been no let-up for a single moment. Every day since the results began to show, 6½ years ago, the demand for more assistance in soil conservation and related work on the land has increased. It has poured in on the Soil Conservation Service and other agencies, both Federal and State. It keeps on coming, from the people who live on the land.

It was this farmer demand, usually strengthened by the voice of the entire community—the townspeople as well as the farmer—that led to the development of the soil conservation district movement. The experience gained through the soil conservation demonstration projects pointed to the need for increased community action in soil and water conservation, for greater assistance and wholehearted participation on the part of all the people affected by the impoverishment and ruin of productive soil. The results of the demonstration work showed also that we had reached the point where the main job was not merely to show what could be done, but to spread as rapidly as possible those measures of conservation that would give security to the agricultural land of the Nation.

This was a work task of immense proportions, involv-

ing the protection of hundreds of millions of acres of farm land, grazing land, forest land, and land for the sustenance of wildlife. Surveys showed that of the 462 million acres, approximately, of good farm land remaining in the country (including that currently in use and that which could be brought into use through irrigation and drainage operations), all but about 130 million acres was subject to erosion wherever used without adequate measures of protection. Good land was washing or blowing away at the rate of more than 500,000 acres every year, with a vastly greater area undergoing continuing impoverishment.

Abuse of land goes beyond the field, beyond the farmer. It touches the entire community, the whole Nation. Waste the farmer's capital of productive soil, and you squander the support of villages, towns, and cities. Migrant farmers, underfed Americans, choked streams and floods mounting to higher crests; reservoirs ruined by the products of erosion, drainage canals and ditches filled, highways, railways, and bridges washed out or undermined, bleak gullies and sterile subsoil for vanishing wildlife—these and other symptoms of national decline are results of erosion that reach beyond the fence lines of fields.

To cope on a broad scale with this problem of a vanishing land resource and all its allied evils, the soil conservation district was designed and proposed.

What Are Soil Conservation Districts?

Soil conservation districts are farmer-formed and farmer-run, for farmers. They are established only upon the petition of landowners and then not until the will of the majority has been expressed in a refer-

The value of supervisors or groups of district farms pooling their resources for the purchase of special harvesting equipment is being demonstrated in the Tallahatchie River District of Mississippi. In this district, a group of farmers has purchased a tractor and combine to harvest seed for farmers on a share basis. By taking part of the seed as a charge for the harvesting service, it has been possible for the purchasers of the equipment to pay for it in a relatively short time. Not only is this a good practice because it gets seed harvested at a low cost, but it encourages more farmers to plant for seed production, thereby assuring a good supply of the kinds of seed required in carrying out conservation plans for their respective farms. This practice of farmers buying equipment by pooling their resources is being encouraged by all agencies cooperating with soil conservation districts.

endum. The districts are controlled and operated by a board of five supervisors, three of whom are elected by the farmers. Every landowner has a voice in shaping the policies of the district in which he lives. The vote of the one-horse farmer is just as strong as that of the large-scale operator. The aims of the district, its land-use policies, and the soil and moisture conservation measures it recommends, are set forth in a work plan, which is drawn up by the local supervisors and approved or disapproved by the landowners.

The districts are legally constituted units of local government set up under a State law. They are a new kind of government organization. They owe no allegiance to any State or Federal bureau or agency, or to any local organization. They have no taxing power. The operating procedure represents democracy at its best. Not a step is taken, not a plan is made, not an erosion-control measure is placed upon the land that does not first have the concurrence of a majority of the landowners affected.

In carrying out the work of conservation within a district, the farmer-controlled board of supervisors may call upon local, State, and Federal agencies for such assistance—technical and otherwise—as the agency may be in a position to provide. At present the Department of Agriculture is cooperating with 294 soil conservation districts throughout the country.

In many of the districts now operating, business, professional, and agricultural interests have allied themselves in a manner seldom duplicated in any other type of community activity. The districts are not merely erosion-control agencies. They may, by law, perform any function which contributes to the "conservation of soil and soil resources"—and that just about runs the whole scale of land-use operations.

For example, one southern district operates a nursery where seedlings are produced for planting on co-operators' farms. Labor for these nurseries is provided by local farm clubs and community organizations in a way that resembles the old log rollings, house raisings, and quilting parties of pioneer days. Districts in some localities are operating marl pits for the production of marl for improving pastures and fields. Some districts are providing machinery for crushing limestone, while the C. C. C. and W. P. A. provide labor. Many districts deal with flood-control problems, and several have established fire-protection associations.

The Winooski Soil Conservation District in Vermont is concerned largely with streambank erosion control. The San Mateo District of California is attempting to improve irrigation practices as part of its program. The Cedar District in North Dakota is leasing certain

THE FRONT COVER

Drawn by C. E. Margraff

Continuing our series of drawings of plants useful in soil conservation, our front cover this month depicts *Eucalyptus globulus*, or blue gum, a native of Australia and the Malayan Peninsula.

Now a naturalized Californian, *Eucalyptus*—some 60 species—has been planted for windbreaks, street shade, ornamentals and timber. The tree is chiefly valuable because of its adaptability to dry sites and eroded slopes.

Farmers have been encouraged by the Soil Conservation Service to plant *Eucalyptus* for erosion control and for fuel. One hundred cords per acre have been produced in 35 years, proportionately large volumes in 10 to 15 years. One hundred thousand trees of four species is the annual output of Soil Conservation Service nurseries in California. These trees leave the nurseries in paper pots, one to a container, assembled in "flats" for convenient handling. The useful range of *Eucalyptus* is limited because it cannot safely be planted where temperatures fall below 20° Fahrenheit.—The Editor.

county and State school grazing lands, then subleasing on a restricted grazing basis in order to improve the range. The Leake District in Mississippi is attempting to drain the more level lands so as to be able to retire to trees the steeper slopes now being farmed. The control of floods, the purchase and retirement of submarginal lands from the hopeless kind of farming that perpetrates relief problems, adjustment in the size of farm and ranch units, more equitable methods of taxing the land, the development of water facilities such as stock-watering ponds and wells, farm forestry, improvement of land-tenure conditions, and numerous other undertakings are among the objectives of many of the soil conservation districts across the country. Practically all districts are attempting to bring about the best possible use of each acre of land and at the same time to conserve and rebuild it so that the men, women, and children on the land may live decently, securely, and happily.

There is in the district probably the most potent stimulus to maintenance of conservation habits and conservation works—in short, the best possible instrument ever devised for the establishment of permanent agriculture through the building of a conservation culture.

In many districts farmers are receiving the assistance of the W. P. A. in fighting erosion. These projects are locally sponsored by the districts themselves.

A sound district program and work plan are the first essentials in a successful district enterprise. Success in any soil and water conservation work will depend, always, upon clear understanding of the landscape—not just what farmers know, but on this plus what the land technician, the erosion scientist, the plant specialist and other technicians know individually and collectively. And not only that—it is necessary to have also the collective application of this technical and practical knowledge, fitted to the land according to the adaptability of the different kinds of land and the individual needs of every acre of land in every field, woodlot, pasture, of every gully and every flooding streamlet. Furthermore, one measure should be used to support another, and what is done in one field should be done, wherever possible, so as to benefit an adjacent field or gully or some piece of land somewhere downstream.

Sound district achievement, like most other types of enterprises, requires a force that has sufficient technical skill to meet whatever problems arise within the enterprise. At the present stage of development, soil conservation districts are necessarily relying largely on public agencies, particularly the Soil Conservation Service for this skilled technical help. The districts should look forward, from the very beginning, to the day when farmers and ranchers themselves will have acquired more of the skills which they may now lack, but which are necessary to carry out the district program—skills that will become conservation habits.

With all the assistance they can get, district supervisors face a huge task. It is similar to the task now confronting the airplane manufacturers of this country—namely, applying mass production methods to a product that in the past has been made on the basis of one unit completed at a time. The single-unit processes of manufacture are being adjusted to assembly production. As a result, rate of manufacture is being speeded many-fold. The principle of mass production is being approached in many districts. Small groups of land operators meet with a conservation technician to prepare collectively, so far as possible, for conservation operations in their neighborhood. Of course, it isn't so simple to plan farms for conservation action on a mass production basis, because each farm is different from every other farm as to physical land characteristics, financial condition, managerial ability of the operator, and many other factors. Nevertheless, several techniques usually are applicable to all the farms of a given locality, so that these can be explained to groups rather than to one operator at a time.

A map for each farm showing a classification of land

according to use capabilities helps to make such planning possible. A table of recommendations as to cropping systems and supporting conservation practices for each class of land developed by supervisors, representative farmers, and technical men is a further aid. These plans, of course, cannot be completed in the group. They must be checked and completed by actual observation on each farm by the technician and the land operator.

Districts Function "At Grass-Roots Level"

Recently much has been said about decentralization of the work of agricultural agencies and the turning over of agricultural programs to county, State, and other organizations.

Through the soil conservation district, the Soil Conservation Service has decentralized its activities to the ultimate degree. Its operations are guided by farmers themselves, through the functioning of democratic processes at the grass-root level. It may be said that through this approach, the responsibility of soil and water conservation work is actually in the hands of farmers themselves. And the work of conservation is going ahead in this way very well.

In fact rather than in theory, the Soil Conservation Service has decentralized its major activity in a way that farmers understand and approve every day through local community action on thousands of farms throughout the country.

With the increasing demand for kudzu planting stock in many of the districts of the southeast, occurs a new development which may lead to a considerable increase in the domestic supply of kudzu seed. At Dadeville, Ala., a plan has been initiated whereby farmers and their families will collect kudzu seed from local plantings and sell this seed to local merchants at the present market price for kudzu seed. This will not only assist in meeting the demands for kudzu planting stock but will provide an income for farm families. The value of this plan should grow as the amount of available seed from kudzu plantings increases.

In the Huntington River Soil Conservation District of central Utah east of the Wasatch Mountains, depositions of sediment from the flood flows of mountain streams with seedings of reed canary grass, strawberry clover, and timothy are being used to restore alkali lands, formerly abandoned to saltgrass and alkali weeds.

DISTRICT OPERATION FROM A SUPERVISOR'S STANDPOINT

BY F. S. HURD¹

HERE in what is now the Arkansas-Verdigris Soil Conservation District we recognized the need of a farm program long before the State passed a soil conservation law. We had watched the once bountiful crops grow less in quantity and poor in quality with the attendant privation to our people. We were alarmed at the slow calamity moving in on us because of loss of fertility from our farms.

In 1934 we learned that a sub-Civilian Conservation Corps camp located at Keystone, Okla., was to be moved, and we made an effort to get it moved to Broken Arrow. Our Broken Arrow Chamber of Commerce spent more than \$1,200 in remodeling store buildings and warehouse space for this camp.

Our people saw that the 10-point program of the Soil Conservation Service was good and an answer to our farm problem. As a result of the C. C. C. demonstration work, at the first meeting of the board of supervisors as a directing body we found lying on our desk over 200 requests from farmers for district aid.

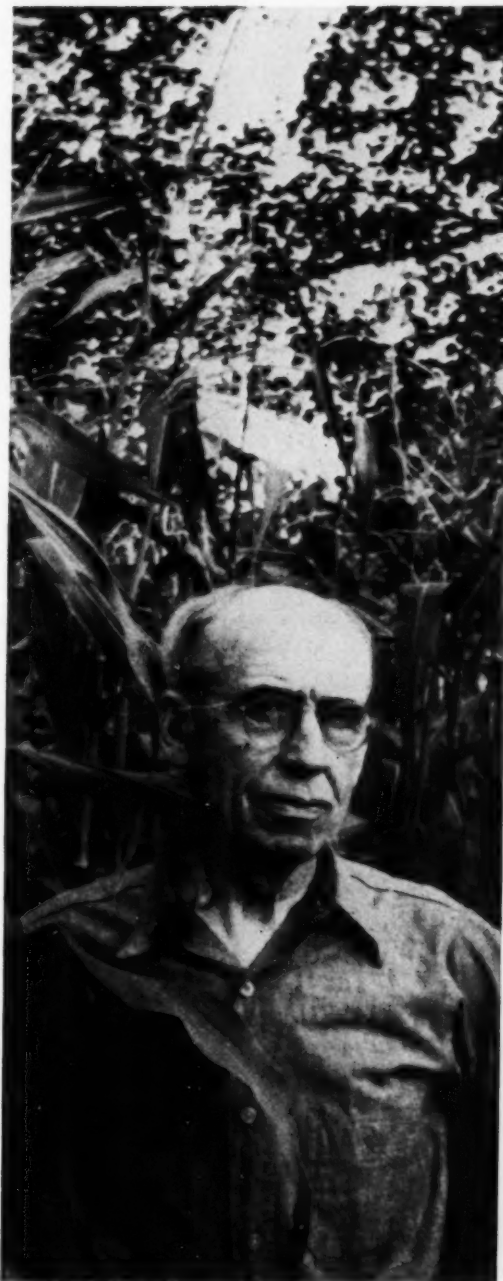
Every member of the board was active in behalf of the organization of the district. They attended meetings, received applications, visited demonstration projects, and participated in tours through areas where C. C. C. camps were doing soil conservation work. All approved thoroughly of the program. The personnel constituting the board gives a splendid cross-section of the district. The membership of the board was and still is: C. W. Wolcott, realtor; J. W. Henderson, dairyman; Herbert Moody, merchant; Ben Phenix, farmer; and F. S. Hurd, banker. All members own and operate farms.

All-Out Soil Defense

In motivating the district program we called into our supervisors meeting representatives of all agencies that we thought could render us assistance, in order that they could plan with us and advise us along the lines of their training and experience. We have continued this policy; at every supervisors meeting representatives from some agency have met and planned with us, so that the district has many agencies to thank for their splendid support, valuable contributions and suggestions.

The board of supervisors has called upon the State Soil Conservation Committee for assistance and they

¹Chairman, Board of Supervisors, Arkansas-Verdigris Soil Conservation District, Broken Arrow, Okla.



F. S. Hurd.

have always responded nobly in getting for us everything that we could use for the benefit of the district. Their cooperation has been a wonderful help in carrying out the program.

The first official meeting held following the beginning of the district operations, October 16, 1938, was one never to be forgotten by members of the Board. We had invited representatives of the Soil Conservation Service. The technicians of that Service who had been assigned to assist the district were present, the State coordinator of the Service, the superintendent of the C. C. C. camp, three county farm agents, several teachers of vocational agriculture and representatives of several other agencies—all were present. This was a very profitable meeting. We knew we were pioneering and wanted to make as few mistakes as possible. Many valuable suggestions were received. There seemed to be unanimity of opinion that we should get the program on the land as quickly as possible. One look at the large number of applications led the board to decide to give priority of application to the farmer who had his "team hooked up and ready to go." This was one of the most important decisions of our board during the 2 years that this district has been in operation.

Supervisors Set Example on Own Farms

The district supervisors made another very important decision at this first meeting—that every member of the board sign a farmer-district agreement just as soon as the district technicians could make the necessary plans. By working out an agreement on our own farms we were in much better position to understand all phases of this new but very important action program. This second decision has proved its value many, many times during the past 2 years.

Education Leads the Way

The first 3 weeks of district operation consisted almost entirely of preliminary work, holding meetings, developing *land-use capability charts*, and other work which was considered necessary before farm planning could be done successfully. The supervisors accepted the responsibility of seeing that copies of the work program and plan were given wide distribution especially among schools, teachers of vocational agriculture, bankers, and leaders of rural organizations. They cooperated with many agencies in sponsoring and holding meetings, tours, and demonstrations. In fact, the records show that during the first 20 months of operation, 98 meetings were held, 17 farm tours were conducted, and 64 articles appeared in the various newspapers covering the district.

We have been constantly confronted with a number of interrelated problems in our over-all agricultural planning for a unified attack on the local problems of our district. In coordinating the work of the various agencies we use a common-sense land-use planning, always taking into consideration that our farmers must make a living while they are saving and building up the land.

As supervisors, we would first call attention to the need for a consistent and far-reaching educational program. This program is one in which there must be no let-up. It must lead the way consistently month after month, and year after year. The district supervisors have made it a policy to cooperate in sponsoring district-wide meetings each year to which cooperators, farmers, and representatives of other organizations can come to obtain a vision, get an inspiration, and receive information that will help them do a better job of conservation. Such meetings not only are helpful to our own farmers, but have a very wholesome effect upon representatives of other organizations attending the meetings. We have a pasture program meeting in the spring in which all farmers are asked to participate, and the benefits derived from soil conservation on farms of cooperators are viewed and discussed. Also, a fall program meeting, participated in by our farmers, is held to encourage protection of wildlife and suppression of fires on the farms.

The Butcher, the Baker, the . . .

A review of the program for one such meeting called for the purpose of promoting wildlife improvement and fire-prevention activities within the district, shows the agencies and their representatives who were on the program: A district agent of the Extension Service; the assistant State supervisor of vocational agriculture; an extension conservationist; the former chairman of the Oklahoma Fish and Game Commission; a forest ranger and a game ranger; the manager of an erosion experiment station; the county superintendent of schools; the superintendent of a C. C. C. camp; a regional biologist of the Soil Conservation Service; the head of the entomology department of the Oklahoma Agricultural and Mechanical College; the chairman of a board of supervisors; and the secretary of the Oklahoma Banker's Association. The results of this meeting have been very gratifying. Wildlife improvement and fire prevention campaigns were conducted in a dozen counties and in several soil conservation districts as a direct result of this meeting.

In our district educational campaign, 3,305 people were in attendance at 18 meetings held in November



Approximately 10 tons of forage per acre was the yield of grain sorghum grown here in erosion-resistant strips and shocked on the contour.

1940. The C. C. C., the Extension Service, and schools cooperated with the board of supervisors in holding these meetings.

The Arkansas-Verdigris Fire Suppression Association, a voluntary association with a membership of 4,000 persons, was the outgrowth of an educational meeting held in the fall of 1939. The pre-suppression fire work of this association has done much to make the people of the district "fire-conscious."

Public Acknowledgment

We are making a policy of giving credit where credit is due. If a cooperator has done a splendid piece of work we believe in telling him and asking his permission to publicize what he has done. The newspapers of the district have done a marvelously cooperative job in helping to extol the virtues of the program and tell what has been accomplished by the individual farmer on his own farm. Recently we have started another program which we believe will go a long way toward improving the programs being established on the farms: Station KTUL at Tulsa, Okla., is giving a radio salute each morning on its farm program. This salute lasts about 4 minutes and gives the name of some cooperator—whether he is owner, tenant, or operator, where he is farming, what he has done (the practices established), and what have been the results. In other words it is a testimonial of some farmer who has found to his own satisfaction that the establishment

of conservation practices on his own farm is a paying proposition. This is one way by which we recognize a cooperator when he has done a good job just a little better than it is usually done. We believe it will promote and improve the quality of the program we are establishing on the farms.

The district supervisors always have shown a keen interest in preparation and sponsoring of exhibits and displays at the community, county and State fairs. These exhibits have done much to acquaint the people with all phases of the program and we have found that they provide another opportunity for recognizing outstanding accomplishments. We never miss an opportunity to supply speakers for civic clubs, short courses, and other meetings where people want to learn of the district program. The members of the board have shown a deep interest, are regular in their attendance at supervisory meetings, on time, and usually have a definite contribution to make for betterment of the district. Many special meetings have been called and we have always had a quorum.

Tulsa, a city of 150,000 in population, is located within this district, and Muskogee, a city of 32,000, is adjacent to the district. We have found that the nonfarm owners in these two cities, and in the towns of our district, are interested in soil conservation. Through local chambers of commerce, garden clubs, and other civic and social organizations, as the non-farm owner gains an understanding of the problem and

gives us his support, *we are establishing mental projects in soil conservation.*

The Extension Service has been a main source of supply in this educational program but we have called on many other agencies for special material and help.

Flood Control by Soil Conservation

Flood control and silting of streams are among our district problems. In the short time that the district has been in operation we have had ample demonstration from farms under our program that we can keep the raindrop where it falls. One among many instances is the W. A. Vandever farm just south of Broken Arrow on which a complete soil and water-conservation program has been established. From a 4-inch torrential downpour not one drop of water left the Vandever farm. The little streams that border the soil-conservation farms now carry a minimum of run-off water and give a promise of flood control along our larger streams, with a cessation of silting of streambeds and of huge, expensive reservoirs.

One serious problem which we encountered in beginning our supervisory work was the large yearly shifting tenant population in our district. We are finding that this conservation program slows down the movement of the tenant from one farm to another. Where landlord and tenant sit down together and work out a 5-year program of soil improvement by crop rotation from one field to another, consider the needs of the farm and how to meet them—with the agreement signed by tenant and landlord and approved by the district supervisors before them, with district technicians visiting that farm frequently to see that the agreement is carried out—with all these definite advantages a new interest in the whole district plan springs into being in the minds of both landlord and tenant. With a vision of the 5-year program ahead, both landlord and tenant begin to feel more permanently settled and look with a new and unified enthusiasm upon the problems of their particular farm.

Giving the Farmer a Lift

The district supervisors have tried not to overlook any opportunity to further the district program. C. C. C. assistance was available from the beginning; however, we were very "stingy" with labor and agreed to limit it to approximately one man-day per acre. Past events have shown that this was a wise decision. We now have two W. P. A. work units assisting the farmers in the establishment of conservation practices. On an average, 80 men are employed on these two projects. The work done through W. P. A. assistance has been highly satisfactory.

Arousing Inventive Genius of Farmer

As supervisors, we have endeavored to impress upon the cooperator that it was his duty to do the work and that he should not feel slighted if very little labor assistance was given him. We have tried to show the farmers how they can improve their methods and increase their efficiency so that they can accomplish a great deal with very little assistance from the district. It was in keeping with this policy that the supervisors sponsored a Bermuda Grass Planting Demonstration last spring, using home-made planters. This demonstration was an outstanding success. More than 200 farmers and other interested persons attended. *The results were that more than 20 different kinds of farmer-made Bermuda grass planters were built by the farmers.* All the labor assistance that the district was able to give for a 2-month period was used in harvesting and hauling Bermuda roots, while the cooperating farmers did the planting themselves.

Another important matter that we have been pushing as supervisors is roadside improvement. A properly sloped, vegetated roadside controls roadside erosion, lessens the expense of road upkeep and makes for less traffic hazards. Now that a large national defense program is under way, the supply roads from our farms to the arterial highways of our Nation should receive our earnest consideration. In connection with roadside improvement we are studying the problem of establishing roadside parks and beautifying the roadside.

Wildlife in Strip Pits

One of the many small problems that we have under advisement is some means of utilizing the ugly eyesores in our scenery caused by strip-pits from which coal has been taken. When the farm program is well under way we hope by forestation to utilize these pits as wildlife refuges so they will become spots of beauty to the eye and a source of joy to the sportsmen.

At the present we are working on ways and means of getting our educational program to the absentee landlord. A land ownership map is being prepared for our use and it will be of material help; but we are aware of the fact that an educational program for the absentee will of necessity be quite different from the programs we have sponsored for our resident people.

The unanimity and accord which we have had on the part of our cooperators bespeak the value of the continuous educational program and the follow-up work done by our technicians.

The district supervisors believe in dividing up their responsibilities and work among other agencies—



Each farm under agreement for erosion control is planning either a post lot or windbreak belt of trees. Pictured here is a portion of a 3-acre plot on the G. L. Hollabaugh farm 3 miles west of Broken Arrow. Catalpas—they were set out in 1939. After being girdled by rabbits, sprouts came along and made an astonishing growth. The lad standing here is 6 feet 2 inches tall.

seeking their cooperation and assistance. We believe that we attained a most important goal when we secured the cooperation of seven teachers of vocational agriculture in the district. Each instructor has been given copies of every farmer-district agreement written within his school district. These are assigned to members of his class, while the supervisors work with the teacher, and farmer and student attempt to make the work as profitable as possible. The student studies the agreement carefully, visits the farmer, talks over the entire program of conservation and farm management with him. The boy makes a report from time to time to the teacher and the supervisors on the progress being made in the establishment of practices and completion of obligations as set forth in

the agreement. The farmer is really an assistant to the vocational teacher, giving practical demonstration to the student of how the district program works on his particular farm.

Leadership, decision, and administration are the responsibilities of the supervisors. Receiving no remuneration for our services, influenced by no body politic or otherwise, we work for the betterment of our immediate farm community as it takes its place with other communities for the State and national welfare.

Conservation Moves Over the Land

We think we have made considerable progress since October 16, 1938. The first cooperative agreement was written November 4, 1938. The semiannual report as of June 30, 1940, shows that there were 331 farmer-district agreements taking in a total of 46,298 acres. The following information should be helpful to other districts throughout the country, or to communities contemplating organization of districts:

Soil conservation practice	Planned	Established
Contour cultivation.....acres..	12, 188	7, 591
Contour furrows and ridges.....do...	12, 185	5, 700
New pasture.....do...	8, 018	3, 213
Old pasture planted.....do...	6, 671	2, 240
Farm pounds.....do...	131	172
Strip cropping.....acre-feet..	1, 419	1, 047
Terracing.....do...	8, 962	2, 896
Woody plantings.....do...	645	385
Cover crops.....do...	6, 952	2, 352
Controlled grazing.....do...	2, 242	1, 693
Diversions.....rods..	3, 324	1, 525
Outlet channels.....do...	3, 468	1, 181
Meadow or pasture strips.....acres..	429	397
New fencing constructed.....rods..	45, 353	16, 095
Old fence removed.....do...	17, 798	6, 593
Gullies treated.....number..	2, 093	1, 187
Rotations approved.....acres..	15, 348	5, 877
Weed control.....do...	18, 423	6, 404
Woodland protected.....do...	812	472

1 47 ponds.

2 32 ponds.

3 50 miles.

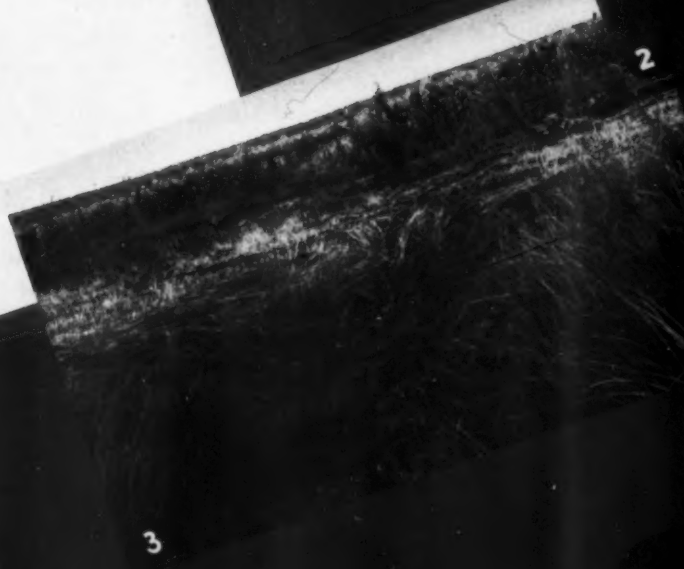
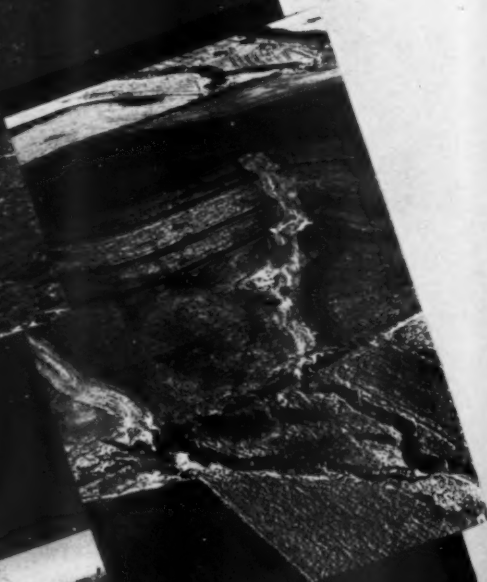
4 20 miles.

The report shows that on 49 farms totaling 4,998 acres, a complete coordinated erosion control program has been established. We still think we were right when we decided that priority would be given to the farmer who had his team hooked up and ready to go.

In the Kannah Creek Soil Conservation District near Grand Junction, on the western slope in Colorado, the productivity of galleta is being greatly increased by flood irrigation for about 6 weeks in the spring, on sites where this practice can be used to advantage. Occasional furrows are used to control the flow of water. Shadscale, one of the saltbushes quite common there, is first stimulated in growth and then killed by the continuation of this use of the flood waters from melting snow on nearby Grand Mesa.



OF THE FARMERS BY THE FARMERS and FOR THE FARMERS



THE other evening I stood before a map of Pawnee County, in southeastern Nebraska, which hangs in the bank president's office at Steinauer. It had been colored, section by section, as the Turkey Creek Soil Conservation District grew and now the green, yellow, and pink squares cover well over half of the county and extend into the neighboring counties to the north and west.

"Too bad that map wasn't made 40 years ago," remarked W. A. Steinauer—he's the bank president and chairman of the district's board of supervisors. "We have worried about gullies and erosion, but we didn't know what to do. We tried many things throughout the years, and then the C. C. C. camp, operated under the supervision of the Soil Conservation Service, showed us some more. Some farmers tried farming across the hillsides and that did some good. It's probably the reason we organized the district."

Yes, the farmers organized the district which now stands as a fine example of what soil conservation districts should be . . . organized in fact by the farmers . . . growing because the farmers seek admission . . . the Soil Conservation Service truly in the position of an assisting agency . . . maximum accomplishments with a minimum of personnel . . . acute interest among the farmers in the progress of the district program, now being extended to the land according to the needs of the different kinds of lands and the economic circumstances, for the benefit of the people.

The Turkey Creek Soil Conservation District was the third district to be formed in Nebraska, and the first in the State in which all the lands were contiguous. Behind its organization is a story which rivals fiction. Its existence is a tribute to the determination of a small group of farmers, once rebuffed but not content to let the matter rest. It took courage, but they saw a job to be done.

The first proposal for organization was made early in 1937, the district to include all of Pawnee County and half of Gage and Johnson Counties to the west and north, respectively. It was beaten at the first meeting, a somewhat uproarious affair at the Pawnee City schoolhouse attended by several hundred persons. Lack of understanding of the district objective and plan of operation indicated that there was little chance for the establishment of a district within the near future.

Notwithstanding this first failure, the Turkey Creek district was organized only 18 months later, however, by an overwhelming majority. It took in 63 thousand

BY A. E. McCLYMONDS¹

acres of the Turkey Creek drainage, in the northwestern portion of Pawnee County and on the fringe of Gage and Johnson Counties. The voting on December 28, 1938, spelled success for the small group of farmers who would not quit. They enlisted their neighbors, one by one, until there were enough to organize. Boundaries were drawn at a meeting at the home of Emil Rinne, about 18 miles north of Pawnee City, and later presented to a meeting at the Teckmeier school for confirmation. It was slow work, but when it was completed this community that wanted help in soil conservation was united.

Today the Turkey Creek district embraces 163,000 acres, and 25,000 more acres are expected to be added soon. The earlier additions were made by petitions, each signed by less than 25 farmers. There have been 15 of these, totaling more than 60,000 acres. The newest addition was by referendum, which brought 40,000 acres of the Mission Community in southwestern Pawnee County into the district in one lump. This also is the first and only addition to a district in Nebraska by referendum. It missed the charmed circle of unanimous approval because one of the voters, an elderly woman, had forgotten her glasses and made her mark in the wrong square.

The first proposal to form a district followed by a little more than a year the establishment of soil conservation demonstrations by the Soil Conservation

¹ Regional conservator, Northern Great Plains Region, Soil Conservation Service Lincoln, Nebr.

AND THIS IS WHAT THE PICTURES MEAN—

1. The use of sod dams converted a gully into a series of small ponds. After the former gully has been fenced, wildlife will be welcomed. The surrounding land has been placed under a system of contour farming.
 2. Air view of gully repair on a cooperator's farm. The former gullies are now grassed waterways which carry run-off from the terraced and contoured farm. The water is disposed of in such a way as not to damage the other farm.
 3. A sloughgrass-sodded flume just after a heavy rain. It is at the lower end of a terrace outlet channel on the farm of E. R. Bredemeier, secretary of the Turkey Creek district, and it shows the quality of protection against water erosion provided by this kind of terrace.
- Lower right.—W. A. Steinauer, chairman of supervisors, in a field of alfalfa and bromegrass on his 230-acre farm.

Service through the facilities of the C. C. C. camp at Pawnee City, started in the fall of 1935. All in all, the camp worked on 102 demonstration farms, 15 of them in the original Turkey Creek district area. There is no need for a play-by-play account of the camp's accomplishments; suffice it to say that this work and the confidence engendered by Camp Superintendent E. R. Danielson, had a strong bearing on the determination to form a soil conservation district.

Historically, the region in which the Turkey Creek Soil Conservation District is located is interesting. Southwestern Pawnee County is part of the Otoe Indians' territory. The rest of the county is part of the homeland of the once powerful Pawnee Nation, the principal village of which was located at the site of Pawnee City, the county seat. When it was discovered, the region supported a tall grass vegetation . . . big bluestem type . . . with trees plentiful on the bottomlands along the stream courses. Buffalo were in abundance and the principal creeks probably were continuous—at least Turkey Creek was a perennial stream as recently as 15 years ago; today there is not a continuously running creek in the whole county.

Settlement started soon after Nebraska and Kansas were thrown open to homesteading in 1854, and Pawnee County is the oldest settled portion of Nebraska. Burchard was the first village established by the white men. The first intensive settlement was in the vicinity of the Presbyterian Mission, established in 1857 for the Otoe Indians. It was this Mission Community, still intact, that brought 40,000 acres of land into the Turkey Creek soil conservation district by referendum.

The land is moderately to steeply rolling, with well-defined drainage systems. The rich soil was developed under a tall grass vegetation, over glacial drift material thinly capped by loess on the hilltops. Ground-water supplies depend upon seepage, because of the impervious bedrock that underlies the region.

Originally, cultivation was confined to small patches of land in the stream bottoms; the uplands were used for grazing. Gradually, more and more land was put under cultivation until today only about one-fourth of the county remains in grass. The agriculture of the region is, basically, general farming. Corn, wheat, oats, barley, and alfalfa are the principal crops. Among the livestock, hogs and cattle are most numerous but there are many sheep. As a result of recent drought years, the number of livestock has decreased.

There are still old-timers in the county who tell of driving from Pawnee City to Marysville, Kans., as

the crow flies—a distance of 30 miles—without crossing a bridge . . . "Without the horses' hooves hitting a plank," they put it. The picture is vastly different now. Pawnee County exhausted its road funds trying to build and maintain bridges and culverts over drainages that carry run-off—increased run-off—from the fields and overgrazed pastures.

Ancient as it is in Nebraska history, this land has been used less than 90 years—the first cultivation was about 1855—much of it less than 60 years. Yet, when the Soil Conservation Service first came on the scene with the C. C. C. camp, every farm was gullied. Many gullies are as much as 25 feet deep and are cutting back into the fields rapidly. Sheet erosion also has taken a heavy toll, so bad that several hundred acres have been abandoned for cultivation, some as long ago as 25 years, and still native grasses have not come back naturally. Crops generally averaged less and less as erosion progressed.

Average precipitation in this area is slightly more than 30 inches and stories of water shortages seem strange, but they reveal how really pernicious are the gullies where the population must depend upon ground water stored above the impervious bedrock. Loss of precipitation through run-off is great, as a result of up-and-down-hill farming, but it is the deep gullies which serve as undesirable drainage ditches and allow the ground water to escape. As a consequence farmers tell of wells going dry part of the year nowadays, and others tell of wells going almost dry. During the drought years the water situation was serious. Crops, too, suffered from the excessive draining of the land. There was plenty to worry about.

A much more forward-looking attitude is evident now, as the district supervisors and farmers assisted by the erosion control technicians tackle the big job.

"The farmers like the idea that their cooperation is voluntary and that they get the technical assistance when they ask for it," said Mr. Steinauer. "We like it that way, too, because when assistance is asked for, we know it is wanted. These farmers know the importance of farm planning . . . they have always planned to some extent . . . and they understand crop rotations pretty well because of the work done by the Nebraska Extension Service and the things they have read in farm magazines and newspapers.

"Many of these people have lived on their farms for years and know their land rather well, but they are glad to get an analysis of the erosion on their farms, the present capabilities of the land, and the recommendations for changes in land use.

"All of this farm planning is done by the farmer,

aided by the technician, and always there is the realization that the farmer still must make a living so that changes can be made only as fast as he is financially able. This combination of the technical knowledge of the Soil Conservation Service and the practical knowledge of the farmer is good . . . it is a way to get first things done first in putting a farm under conservation management."

The technical staff was assigned in April 1939, D. E. Hutchinson being chosen as district conservationist. With him are an assistant conservationist and a clerk. An engineer was assigned to the district for about a year. Two technicians are attached to the Pawnee City C. C. C. camp. The camp furnishes assistance in labor and material. To date, this staff has completed more than 100 signed agreements, and is taking care of the rest of the 300 applications as rapidly as it can. The acreage represented by the applications totals over 51,000 acres, and more are coming in with regularity.

The principal problems, stated briefly, are to develop a good sound farm management plan, check water erosion, conserve as much water as possible for crops and ground water storage, and dispose of the excess water in such a manner as to prevent erosion on the cooperator's farm and also protect the farmer lower down the drainage from damage. That's not just the way it is stated in the work plan, but it is the farmers' interpretation of the farm plan. This was told to me in a cornfield about 16 miles northwest of Pawnee City where I talked to Gottlieb Rinne. His cornfield is now cultivated on the contour. He has been on the farm more than a quarter of a century.

"If I don't have contours and terraces, the water from my farm will wash his land," he said, pointing to his neighbor's place. "I think that working together like this is one of the big things about soil conservation."

In cold figures, the work already done on the farms of cooperators is this: Six thousand acres put under contour cultivation; 500 acres of pasture contour-furrowed; 800 acres of land retired from cultivation and seeded to grass, principally brome grass and alfalfa; 300 acres protected by terraces built up to specification, and the farmers are building up many more by gradual stages; 40 acres of tree plantings; 150 acres planted to vegetation that will benefit wildlife; small gullies leveled or filled in and seeded with vegetation that provides stable waterways for disposing of excess run-off and some gullies dammed to provide stock water ponds. Control of the watersheds of the larger gullies is already under way, and plans have

been drawn for establishing ponds in some 30 of them.

To summarize, the district is providing for proper protection and use for each acre on every farm. These are the cold figures, but they do not tell of the spirit of the farmers, nor the changes—the renewed hope, the determination to provide securely for the land and to conserve rainfall—that are coming over the community.

"Yes, I have lots of crooked rows," Gottlieb Rinne said, "but I wouldn't go back to the other way for anything. Do I intend to keep on after the 5-year agreement is over? You bet I do. I didn't believe it when they told me it would take 5 years to put the farm plan in operation, but, by golly, it *will* take me that long."

"Say," he said, turning to Hutchinson, who was with me, "can you get that two-way plow out here pretty soon? I think I'll put in those pasture furrows now . . . about a rod apart, what do you think?"

Hutchinson agreed, and Mr. Rinne turned to me again: "I've got one terrace over there [pointing] and I'm going to put another there. The thing that sold me on terraces was this August when we had 14 inches of rain and I saw the water running lazy and clean along the terrace channel.

"Say, Hutch, I was plowing on that west hillside the other day and just for fun I turned the tractor uphill. I had to go into low right away, but on the contour I moved right along in high. It sure makes a difference."

This enthusiasm and spirit of cooperation is spreading. It is remarked that in one community where S. C. S.-C. C. C. demonstration farms were located in a group, conservation farming has increased the ground water and there is more water in the shallow wells all the year around. Another C. C. C. demonstration is pointed out—the Nicholas Klein place, 8 miles northwest of Pawnee City, which was put on a conservation operations basis. A deep gully was eating into the farmyard and the well there had so nearly dried up that it didn't furnish enough water for family use. The gully was dammed. It collects and holds the drainage water now, and the Klein well gives all the water needed for home and stock. Fish planted in the deep pond that was built to conserve water, now furnish sport as well as fish for the table. Moreover, ducks are now coming to the Klein pond. As many as 40 people have been seen swimming there in a single day in summer, and in winter there is ice skating.

"Does it pay?" Emil Rinne repeated to my query. "You bet it does. Some of the fellows asked how I

expected to get 40-bushel corn from my land. Well, it's producing 40 on the average. One field went 79 bushels. It's all contoured and terraced. We had 14 inches of rain in August and we didn't lose any of it. Man, the ground's really soaked!"

Fortunately, these farmers also realize the relationship between forage production and livestock on the farm, but pasture management was something that needed developing. It is taking hold rapidly now, however, probably as a consequence of results obtained on section 9, where the S. C. S.-C. C. C. camp took some worn-out pasture land, eliminated weeds with a close-growing crop, seeded grass, and then followed with a rotation grazing plan. Income from the section during the period of repair exceeded previous income, and the land is fully productive again.

"But this careful planning of farm operations is bound to help," is the reaction of Emmett Wenzl, 5 miles north of Pawnee City, who is first getting his land under a conservation system preparatory to controlling a huge gully. "It takes a little time, but the difference between a properly contoured farm and one farmed by the old system is just a matter of getting used to it. I'm staying with contours."

Perhaps one of the most interesting developments is the changing viewpoint of farmers and townspeople alike. The bitter opposition at the first meeting in 1937 centered on the fear of regimentation—farmers want to retain control of their land, and particularly these farmers because so many are long-time residents and even descendants of the first settlers. The occupancy survey shows how intense is this feeling of "my land." Forty-three percent of the farms are owner-operated and just under 12 percent are operated by men who own part of the land. The rest is tenant-operated, but a large proportion of the tenants are relatives of the owners. The average size of farm is 201 acres, although there are a few approaching 1,000 acres and a few that are little more than acres—a couple of acres or so.

Neighboring farmers watched the Turkey Creek district closely. The regimentation did not show up . . . the farmers in the district went to work enthusiastically . . . their own supervisors ran the business . . . there was no government agreement, except with the supervisors to help carry out the farmers' program. It worked. Other farmers decided they wanted help too, and petitions were circulated. The first addition was made in December 1939, just a year after the district was organized. Listen to Everett M. Barr, a director of Tarkio College (Missouri) and farmer in the Mission Community.

"We have real problems here and must have help in meeting them," Mr. Barr said. "They are our problems, however; it's our land that is at stake and we are the ones most concerned with the results. The soil conservation district is the right approach, and the viewpoint of our people toward the district has changed considerably since it has been operating."

Farmers are not the only ones who have been taking an active interest. Harold Vance, vocational agriculture teacher at the Pawnee City high school, has gone out into the field and worked with the Soil Conservation Service technicians so that he can bring conservation training to his students . . . I mean worked, not watched. He and the class are helping to plan and put on a conservation basis the farm of a member of the class whose father died about a year ago.

"The soil conservation district plan opens a wide field for the agricultural teacher," Vance declared. "His course can be made dynamic because it can bring something tangible to the boy from the farm. To me, it seems as a big laboratory which I am glad has come my way."

The laboratory idea is spreading. The State college of agriculture is conducting a farm management study, the State game commission is carrying on a quail restoration project, and the agricultural college and the Soil Conservation Service have joined in a pasture study.

While the motive power that propels the district forward comes from the people, the educational side is not overlooked. The supervisors have appointed 34 members to act on a committee to assist in carrying on the educational program. These persons are all outstanding conservation farmers. They schedule the meetings, which are nearly all neighborhood affairs with small attendances. The visitors are shown pictures and told of the newest developments in conservation, while discussions bring out suggestions from the farmers who are encouraged to study conservation methods critically and even to experiment. Some of the meetings are attended by people from outside the district, and many take the ideas home for trial.

In the meantime the board of supervisors runs the business of the district. The present supervisors are the members of the original board, all of the small band who organized the district. Once a month they gather around the long table in the bank, Mr. Steinauer and secretary Edwin H. Bredemeier at the head of the table, and the others, Emil Rinne, Steven Kalin, and

(Continued on p. 208)

THE BANKER'S PART IN SOIL CONSERVATION DISTRICTS

By WALTER S. COTHRAN¹

WE all know that lending money to farmers carries a problem different from any other banking problem; and yet, let me remind you of one striking analogy:

A merchant or manufacturer brings in his financial statement to you. It shows a capital loss from the preceding year. You do a lot of investigating before you lend him the money. The next year his statement shows about the same loss of capital; you don't need to investigate; you've seen enough, and without the least hesitancy you decline to make the loan. The funny thing is that you go right on making loans, year after year, to another class of borrowers who every year suffer a loss of capital. That is, the farmer, whose soil, his capital, is constantly slipping away from him because of lack of proper protection, which in turn may be due to lack of funds, or lack of knowledge as to how to save his soil.

I shall not discuss soil waste. We bankers fully realize its cost to our State, to its farmers, and to its bankers. Let us discuss the subject of what we are going to do about it. I say "we" advisedly, because we bankers very definitely have our place in the picture.

With so many fields of endeavor offered to us, so many varied activities demanding our time, so many other problems of the banking business requiring our thought, we must never for a moment forget that Georgia is still primarily an agricultural State, needing banker help for a successful agricultural program, and our efforts and attention must not be distracted from that objective.

I don't think many of us bankers could lay off a terrace for our farmer customer. I don't think we could tell him where to plant lespedeza or crimson clover in a field of strip cropping. I don't think we could plan a good water disposal system for him; in fact, I think we would be a pack of fools if we tried. What we can, and should do, is to use our influence with farmers to induce them to take advantage of an opportunity now being offered to them. I hope the opportunity is lasting—certainly until all of our land is put to its proper and profitable use. These are functions of local soil conservation districts carried on

with assistance from the Soil Conservation Service and other agencies—local, State, and Federal.

Now, some of us may think that erosion is not such a danger in Georgia. If you do, listen to these figures: The total land area of our State is 37,568,000 acres. One sixth of it, or 6,455,000 acres, is severely eroded, and 16,181,000 acres are more or less eroded and definitely in need of treatment. That is to say, 1 acre in every 16 is in need of reclamation, and 1 acre out of every 2½ acres is in need of conservation.

The Soil Conservation Service maintains five demonstration projects in Georgia. There are 9 S. C. S.-C. C. C. camps in this State. Our farmer customers should see what is going on in these demonstration areas—even if we have to organize motorcades, and carry them. With farmers, as with the rest of us, seeing is believing, and they will see doings at these demonstration areas that are valuable and practical; they will see farm practices which they will want to install on their own farms; and they will gain an insight into the opportunities for neighbor cooperation through the soil conservation districts.

Very soon after the requisite national legislation was adopted by Congress, Georgia passed the soil conservation districts law, under which 19 districts are now organized, embracing 92 counties, and including about 22,000,000 acres.

I wonder if we really appreciate the value of the opportunity now offered to our farmer customers by the Soil Conservation Service and the soil conservation districts? I have heard of the interest being taken in it by many of you in Group Two—Mr. Turner of Jefferson, Charlie Bradford and Harry Arnold of Monroe, Ike Ferguson and Dewey Johnson of Augusta, Charlie Skinner of Waynesboro, Jim White of Athens, Mr. Westbrook of Ila, who is supervisor there, and many others. I know your interest and influence is not misplaced.

Some of you, though, may not know the value of this work, so I want to tell you of an interview I had last Sunday afternoon.

I sat on Noble Holland's front porch and listened to an interesting story. He told me he moved onto his farm in 1917. After working it for 20 years, he was so discouraged that, as he expressed it, "I was just ready to quit trying." He pointed to a field of corn, in a bottom, in front of his house and said that he

¹ The author is vice president of the National City Bank of Rome, Ga. This article is adapted from an address by Mr. Cotheran at the annual meeting of Group Two, Georgia Bankers Association, Washington, Ga., November 20, 1940.

lost about one crop out of three, because of water standing on it due to improper drainage. His cotton land was washing away and had been doing so for many years. Three years ago the Soil Conservation Service laid out a farm plan for him which he proceeded to follow.

Another farm lay between his farm and a creek. That adjoining farm was also planned and through it drainage ditches were made which drained both farms. Now Mr. Holland's cornfield on which formerly the water stood and drowned out his crop, produces 25 to 30 bushels every year. On the cotton land, on which he has been planting soil building crops, he has already picked a bale to the acre, and he hasn't finished picking yet.

There is a tract of 80 acres adjoining him on the up-grade side. It was utterly unprotected, with the result that the water poured across Mr. Holland's farm. So last year Mr. Holland just up and bought that backward little 80 acres. A nearby bank, seeing the sort of farmer Mr. Holland was, and the fine improvement in his farm, and the increased income from it, was glad to finance the purchase. So now on this 80 acres, at last being operated under a soil conservation plan, I saw terraces with proper outlets, I saw strips of *Lespedeza sericea*, I saw kudzu on badly washed tracts, and cover crops on many acres. Mr. Holland told me that on his entire farm of 200 acres he had paid out \$182 for terracing, his total cash outlay in carrying out the plan except for a few seed he bought to start with.

I asked Mr. Holland, and also a soil conservation technician, what reasons were advanced by some farmers for not taking on the conservation plan. They seemed to think that one cause for hesitancy lay in the necessity of working 365 days a year. Other objections were directed to the initial cash outlay and to the necessary change from traditional ways of farming.

Bankers, as I said in the beginning, have a definite place in the picture of reclamation and conservation of soil. Yours is a position of influence in your community, especially with farmers. The active influence of a banker can do more for soil conservation than any amount of talking and preaching, in selling the farmer on the idea of taking full advantage of the service afforded by the soil conservation districts.

The other spot the banker occupies in the picture is providing funds for the initial cash outlay needed for terracing and fencing and so on, when the farmer starts his plan. As one farmer told me, "It takes just a little money but a lot of time, to save your soil."

As I see it, there is every sound reason for the farmer to take immediate advantage of the opportunity now offered under the soil conservation districts.

Already in the projects, camps and districts in Georgia, 5,037 farms with 929,107 acres, have been planned; 96,000 acres have been protected by terraces, 70,000 acres have been strip-cropped and 364,000 acres have been protected by winter cover crops.

This accomplishment is but the beginning of an excellent investment. I call upon Georgia bankers—bankers everywhere—to recognize the importance of the idea and the program of the soil conservation districts, and to embrace every opportunity to function as junior partners in an enterprise of such rich promise to the future of agriculture and of the whole social order.

OF FARMERS, BY FARMERS, FOR FARMERS

(Continued from p. 206)

Gaylord Sisco, around the table. Present by invitation to answer questions, are Mr. Hutchinson and Mr. Danielson. Make no mistake about it, the supervisors regard the district as the farmers' organization and realize that they are obligated to work in the best interests of many farmers.

One supervisor made this brief talk:

"Where are we going from here? Well, that's looking a long way into the future. With the district getting larger all of the time we've got a long job. Every farmer is encouraged to go ahead as fast as he can afford to, but no faster. Maybe it's slower that way, but it's better.

"I think that where we are going from here is toward a goal of building up the soil of every farm, controlling the water and conserving it, and then keeping our farms safe.

"The careful planning of farming operations, according to the needs of the land, and then equally careful application of conservation measures is the way to accomplish this. More than that, better farming according to correct soil and water conservation planning means greater economic security and higher standards of living for our people, and the spirit of voluntary cooperation that has become evident means that our community will advance. There's a lot more to soil conservation than just saving the soil.

"There are other things, too. A few years ago the county dropped the county agent because he was not needed, or so we thought. At the last election, the county agent was voted back in because the work of the district showed that we needed him, as well as the Soil Conservation Service. We probably will see other needs as we go ahead, but now that we are organized we can study each problem carefully and cooperatively and reach the right answer."

THEY KNEW WHAT THEY WANTED

BY FRANK B. HARPER¹ AND HAROLD E. RUSSELL²

FARMERS and ranchers of the Latah Soil Conservation District in northern Idaho believe it is "in the cards" that their new district organization will help them to more profitable use of their rich Palouse lands. The "cards" in which these Pacific Northwest land owners and operators read the future of a 694,323-acre area that includes some of the best cropland in the United States, or in the world, are mere strips of roughly lettered cardboard. Latah County's leading farmers marked them. They are used face up for the benefit of the 1,780 farm operators of the district. It is expected that by June 30, 1941, some 200 farmers will have staked their time and money on these pasteboards.

On March 16, almost a year ago, Latah County farmers went to the polls and voted to organize a soil conservation district under the Idaho State enabling act of 1939. They knew what they wanted; many of them already had had personal experience, or had observed closely as their neighbors worked to control erosion and to set up wise land use practices. Through a number of projects—the erosion control experiment station 9 miles away at Pullman, Wash., the erosion-control demonstration project near Moscow on the south fork of the Palouse River, the Moscow C. C. C. camp set up in 1935, the extension demonstration plans scattered throughout the country—the farm people of Latah County had learned of the benefits, to themselves and to their land, of planned farming and erosion-control practices. Their vote for a medium through which to carry on soil-conservation work, after the Government's projects might no longer be at hand, was preponderantly affirmative.

The Latah Soil Conservation District was set up, legally, as Ida-101, the first in Idaho. Actually, according to Chairman Henry Bottjer or any of the other four supervisors, organization of their district was not as simple as a mere name and number. The real work was to come, and the details were many and involved. The first thing they did was to invite the Soil Conservation Service, which had been heading up the local erosion-control demonstration work, to come in and help them with the new district's organization. Three full-time technicians were assigned to them—a conservationist, a farm planner, and an engineer—and it soon developed that these 3 men could not have

all the answers for upwards of 2,000 farmers operating over an area some 50 miles long and 35 miles wide—additional part-time assistance and a generous supply of memoranda notwithstanding.

Out of this dilemma, the card idea was born. The district leaders and assisting Service personnel knew that they must "grow" with the development of the infant organization. This first step, then, was the setting down, in rough-draft outline form, on cards, all available helpful information from past experience in the area, gleaned from the memoranda and all possible sources.

The first set of a dozen cards indicated the district's *line of authority*, from the 1939 district enabling act, through the State soil conservation commission and the Latah Soil Conservation District to the supervisors, and the "why, where and what" of the district program. A second set of cards, following logically the first, outlined the *reasons and objectives* of a district program and work plan, memoranda of understanding, planning through both individual and district-wide plans, and operations through individual farmer and group action.

In preliminary meetings, the supervisors already had decided upon half a dozen objectives as taking in the major problems of the district. These promptly became the backbone of the outline that later was to become the district's organization chart. Briefly, they are (1) prevention of erosion on the farm land, (2) conservation of water, (3) watershed protection, (4) woodland management, (5) range management, and (6) land clearing.

The supervisors called a meeting on July 18, to select 25 community advisory committeemen from among interested farmers in the district to function in a voluntary advisory capacity with the supervisors in the 5 subdistrict areas. Discussion of planning, operations, and objectives also was on the agenda. After the advisory committeemen had been named, the first two sets of organization cards were put up on the blackboard, as something of an abbreviated chart. As each of the main objectives was suggested by one of the leaders, the appropriate card was added to the growing organization chart.

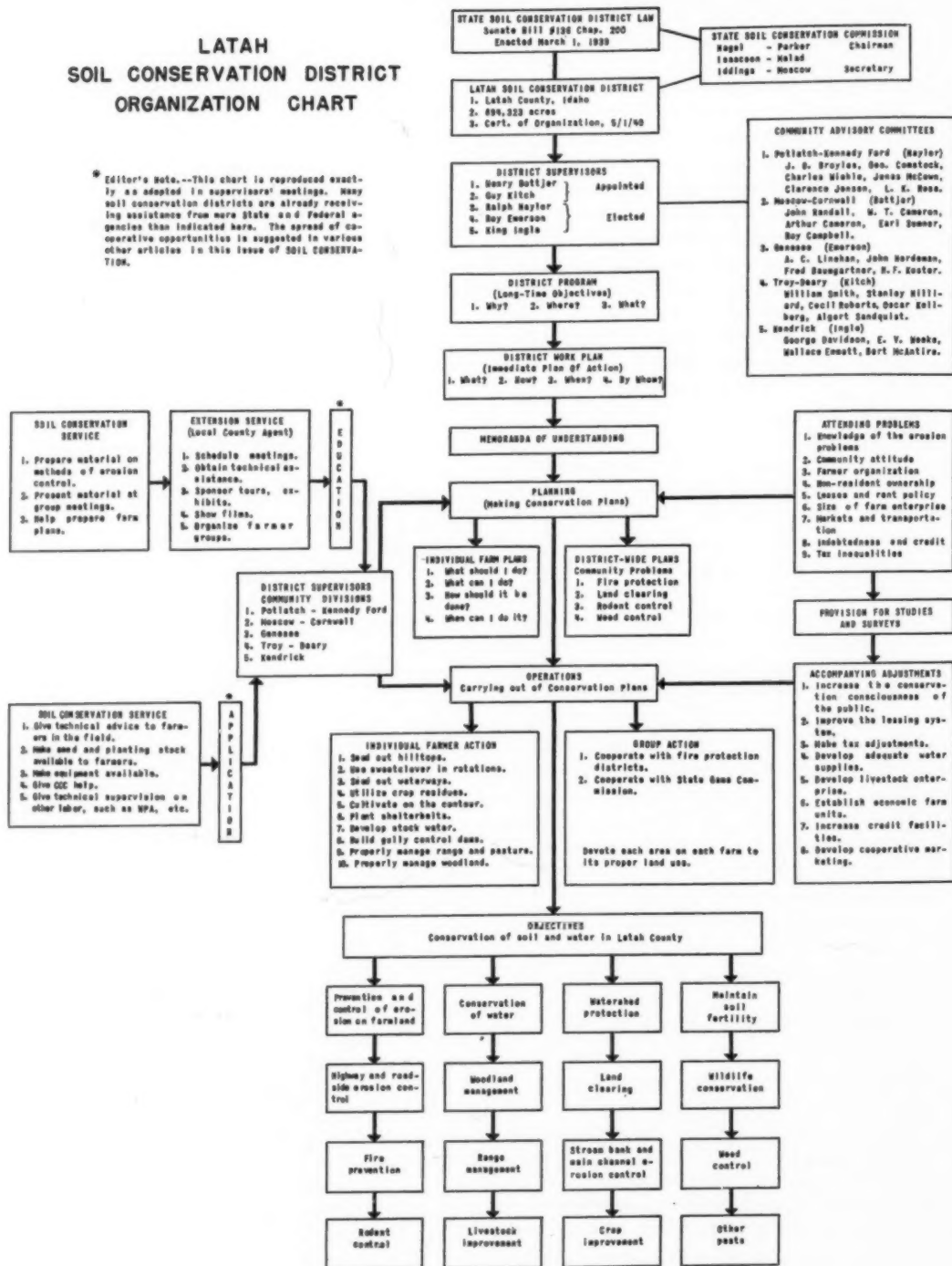
Suggestions for other specific objectives to be considered were invited from the floor by the chairman, with the result that 10 more cards were written in longhand and added to the chart, covering the follow-

¹ In charge, current information section, regional division of information, Pacific Northwest Region, Soil Conservation Service, Spokane, Wash.

² District conservationist, Latah Soil Conservation District, Moscow, Idaho.

LATAH SOIL CONSERVATION DISTRICT ORGANIZATION CHART

* Editor's note.—This chart is reproduced exactly as adopted in supervisors' meetings. Many soil conservation districts are already receiving assistance from more State and Federal agencies than indicated here. The spread of cooperative opportunities is suggested in various other articles in this issue of SOIL CONSERVATION.



ing objectives: Maintenance of soil fertility, highway and roadside erosion control, wildlife conservation, fire prevention, stream-bank and main-channel erosion control, weed control, rodent control, livestock improvement, crop improvement, and control of other pests.

The supervisors and advisory committeemen had come to the mid-July meeting with their sleeves rolled up—there was much to be done and now was the time to do it. The discussion turned next to conservation practices necessary to meet the objectives. To supplement the working chart that had been developed, large separate placards were put up and suggestions were asked for from the floor. The chart objective of "Conservation of Water," for example, prompted this list of specific practices agreed upon then and there:

- | | |
|---------------------------------|------------------------|
| 1. Rough tillage. | 6. Gully dams. |
| 2. Stubble utilization. | 7. Restricted grazing. |
| 3. Maintenance of timber cover. | 8. Fire prevention. |
| 4. Spring development. | 9. Chiseling. |
| 5. Stock ponds. | 10. Crop rotation. |

By the same procedure, "Watershed Protection" was tied down to:

- | | |
|-------------------------|---------------------------------|
| 1. Woodland management. | 5. Fire prevention. |
| 2. Range management. | 6. Reseeding burned-over areas. |
| 3. Reforestation. | 7. Proper slash disposal. |
| 4. Camp grounds. | |

During this meeting each of the 16 objectives was similarly worked out as to specific practices, the district supervisors and committeemen formally approved them, and all concerned decided to "call it a night."

The next job was to draft the district program and work plan. On these, too, the supervisors had definite ideas. One was that there should be group undertakings by the district, such as cooperation with fire protection districts or with highway agencies in roadside erosion control, as well as in the individual operator's land-use practices on his own farm. Another was that every landowner or operator in the district should have land-classification information, should know what is necessary for developing a complete soil conservation program on his place, and should be informed as to the percentage of the ideal plan that he can carry out economically.

As a result of careful thought and discussion, taking in all details, each Latah District farm plan sets forth, first, an inventory of the farm's erosion conditions, second, the ideal erosion-control plan for the unit and third, a statement of what the operator can do eco-

nomically toward effecting this plan within the next 2 or 3 years. In other words, every district cooperator's folder actually contains two farm plans instead of one—the ultimate ideal plan, and the immediately, economically, practicable plan.

The district organization chart and the supplemental practices cards, once drawn up, were not by any means relegated to the district's minutes or files. They are in constant use at discussion and planning meetings throughout the district, along with soil-profile charts and other graphic material designed to help small groups of farmers to a clearer and quicker understanding of their new program.

The organization chart was expanded subsequently to take in two more sets of cards. On one set was outlined the cooperative relationships of the State extension service through County Agent G. T. McAlexander, who has been particularly active in assisting with district organization details, and of the Soil Conservation Service in educational responsibilities in the district. This group of cards also shows the place of the district supervisors and community divisions, as well as of the Service, in the handling of applications for district planning assistance. The final block added to the chart consists of a list of the community advisory committees, a statement of attending planning problems, provision for studies and surveys, and accompanying adjustments tying in with operations.

The Latah district supervisors, with Service personnel assistance, are building up their concrete working organization to conform to the individual farm planning accomplishment through a systematic schedule of group meetings. First is the over-all meeting in a community or district subdivision having more or less common problems. During the hour and a half to 2 hours of discussion, objectives and problems agreed upon by that community are considered, along with methods of approach suggested by the supervisors and an explanation of the group-planning objective to give the greatest amount of assistance at the least cost. Out of the over-all discussion meeting grow the unit planning meetings, the number depending on the applications from that area. Usually 8 to 12 farmers participate in the unit meetings, working together as neighbors.

The small unit meeting is predicated on the belief that before the farmer can understand what he is doing, he must know why, and he must be acquainted with the fundamentals of soils, land-use capabilities, and so on. Again, through the use of cards, these facts are built up in open meeting. Colored cards

representing the different land classes by soil and slope are pinned up on a profile graph, so that the farmer, when he receives his own conservation survey map later, will know at once how to interpret it. Either at this first unit meeting, or at a second one, specific practices are taken up. The farmers themselves suggest practices they think they should adopt, as well as those to be avoided.

After one or two meetings devoted to this discussion of practices, a planning meeting is held. A "dummy" map of a typical farm in the particular community is put up, and the farmers, without prompting from the chairman, present their suggestions for crop rotations, grass and legume seedings, retirement, woodland plantings, etc. The dummy map then is turned over and the proposals are checked against the farm organization summary with which the proposed revised field-uses must balance. More often than not, the farmers find that they must rework the dummy plan, to get the correct proportion of hay and livestock, for example, or to avoid having too much of the farm in one crop over a given year.

The farmers—the same group that has gone through all the unit meetings—now are ready to work out their individual farm plans. By this time, a conservation survey map is ready for each farmer and it is given to him with a farm organization summary blank on which he may put down his crop, livestock, and other requirements. Before the next unit meeting, the farm planner from the Soil Conservation Service goes over the farm with the operator and gives him whatever specific assistance he desires.

Each farmer comes to the final planning meeting with his own plan worked out in rough-draft. Sitting apart, the farmers spread out their plans and work to perfect them, calling upon the technician present for any further help they may need. Particularly with the aid of their A. A. A. farm maps, the operators at this meeting put their individual plans into shape for typing in final form at the district office. A final unit meeting is held for signing the plans.

Throughout the organization and planning procedure, the "block" system is followed. The conservation surveys, for example, are made in blocks of farms, the better to obtain complete protection on a watershed or drainage; or perhaps to provide a number of stockwater ponds in one area to facilitate the work of the cooperating Moscow C. C. C. camp crews.

The block approach works to advantage also in projects such as planning county road developments, and the handling of cleared timberland. For example, the Farm Security Administration loans on such lands

are made contingent upon conservation survey information available throughout the district, confirming the economic feasibility of the units involved. One private concern that has been doing cut-over timber clearing work in the district area, using a bulldozer, already has volunteered not to clear a piece of land if the district's conservation surveys show it should not be farmed.

The Latah district supervisors are enthusiastic about the organization and the planning methods that have developed with their still young districts:

"This is far ahead of the old type of planning," Chairman Bottjer said, recalling his own earlier and successful C. C. C. demonstration plan. "What the farmers don't like is somebody coming along and telling them what to do. Now they bring in their own plans and work them over to see what can be done . . . The cards help a lot; if a fellow can see a thing, he gets a better impression of it. We're just getting started but I think that if we follow those cards right along, we'll not have any trouble or get tangled up."

Supervisor Guy Kitch, who has attended several sets of the overall and unit meetings in his district subdivision, commented thus: "If we were going to do it again, I wouldn't know a better way than by the use of these cards and charts." Then, rather ruefully, he added, "If I can be as successful in erosion control as I have been in starting this erosion, I ought to get results. I can't blame anyone else because we broke the place out from timber. In my opinion, I think our method of organization is important; it gives each man an interest in the district program and a sense of responsibility he would not get if the plan were just handed down to him."

Supervisor Ralph Naylor was one of the first erosion-control demonstration cooperators in the county, and he remarked that his farm is "getting better all the time," with 40-bushel wheat now where he used to raise only 30. "These little neighborhood meetings are the thing. It is the real way to get the problems threshed out," he said.

At these meetings, which the Latah district farmers attend with so much enthusiasm, will be found the two other supervisors, Roy Emerson and King D. Ingle. The full-time Soil Conservation Service district staff, in addition to the district conservationist, is composed of Verle Kaiser, farm planner, and Louis Wakefield, engineer—these men will be there too, whenever possible. The district uses also the one-third time of a forester and of a range man, while mobile surveys assistance is available when needed.

A DISTRICT SAVES WATER WHERE IT FALLS

An Interview with a Supervisor

BY TOM DALE¹

THE Central Curry Soil Conservation District in New Mexico has been enlarged three times in 2 years. It covered only 410,000 acres as first organized, but today it includes all of Curry County—approximately 890,000 acres.

A. J. Reid, 53, is chairman of the supervisors. He owns 560 acres of land, farms an additional 550 acres. A cooperater with the Soil Conservation Service on the old demonstration area, Mr. Reid is an active proponent of soil and water conservation for the Southern Plains.

He was appointed supervisor of the district by the State committee at the time it was set up in the fall of 1938. His first appointment was for a 2-year term; recently this tenure has been extended for another 3 years.

Born and reared on a corn-hog farm in Alabama, Mr. Reid at 21 left for southwest Oklahoma. A year later, in 1909, he settled in Curry County. His 31-year residence makes him one of the old timers. He has been growing wheat to some extent ever since 1916 but has never been a single-cropper.

The 500 laying hens on the Reid farm, from which \$136.20 worth of eggs were sold in November 1940, are the principal sources of cash. He markets about 300 turkeys each fall. Usually he keeps 5 or 6 brood sows. He depends on the chickens, turkeys, and hogs to eat up most of the sorghum feed produced on the farm. He also has some 30 head of cattle.

Mr. Reid thinks that soil conservation in Curry County must start with water conservation. He is an apostle of terraces and contour tillage to hold the water. All the cultivated land on his farm has been terraced for several years. The land he is renting next year also is terraced.

"We have to save the water to make crops and conserve the soil in this country," Mr. Reid contends. "We call this a flat country but you'd be surprised at the amount of water that runs off into the draws and wet-weather lakes during heavy rains. This country doesn't wash away as it did in Alabama, but soil conservation is important wherever farming or ranching is done.

"Soil conservation districts seem to me to be the best way to get the job done. They give us local govern-

mental agencies with authority to act and to receive aid from Federal and State agencies."

The Central Curry Soil Conservation District was a natural outgrowth from the demonstration project of the Soil Conservation Service that was established in Curry County in 1937. Since the district has been organized, 113 farmers within its boundaries, farming 144,214 acres, have signed agreements with the district to install a complete soil and water conservation program on their farms. This is in addition to farmers living in the district who already were cooperating with the Service in demonstrating erosion-control methods under agreements signed with the old demonstration project.

When asked what he considered to be the most important thing that the district had done since it was organized, Mr. Reid said, "I think the most important thing we have done is to make the people of this county conscious of the fact that we have a soil conservation problem."

He was high in his praise of the men from the Soil Conservation Service and of the county agent, who had been assisting the district in its program, and mentioned the valuable help received from the Farm Security Administration and other agencies. "The district set out to get all agencies to assist on our program and you'd be surprised at the way they are cooperating with us."

The supervisors of the Central Curry District have encouraged farmers to develop new methods of constructing terraces. One man recently bought a small elevating grader and after terracing his own farm has started doing contract work for his neighbors in the district. The one-way plow and other implements found on most farms in the county also are used to build terraces. The supervisors feel that the terracing program will never spread as it should until farmers learn to build terraces with their own equipment.

Mr. Reid thinks that one of the greatest needs is more interest in small communities and farm homes. "Too many people are moving to town and farming from a distance. Trees, flowers, yards, and gardens are worth a lot more to this country than their cash value. Pride in farms and farm homes is needed," he declares. "We have made more real progress during the last 4 years than in all our history."

(Continued on p. 232)

¹ Chief, regional division of information, Southern Great Plains Region, Soil Conservation Service, Amarillo, Tex.

A NEW MAP IS TRACED B



BY THE MEN OF THE SOIL

And the Farmers' Soil Conservation Districts
Look to the



Soil Conservation Service

For technical services, labor, field equipment, materials, and leadership bearing on the district program.

Extension Service

For leadership and coordination of College, State, and Federal educational activities.

Farm Security Administration

For cooperation in rendering financial assistance to farmers.

Agricultural Adjustment Administration

For financial assistance through payments for soil conservation practices.

Bureau of Agricultural Economics

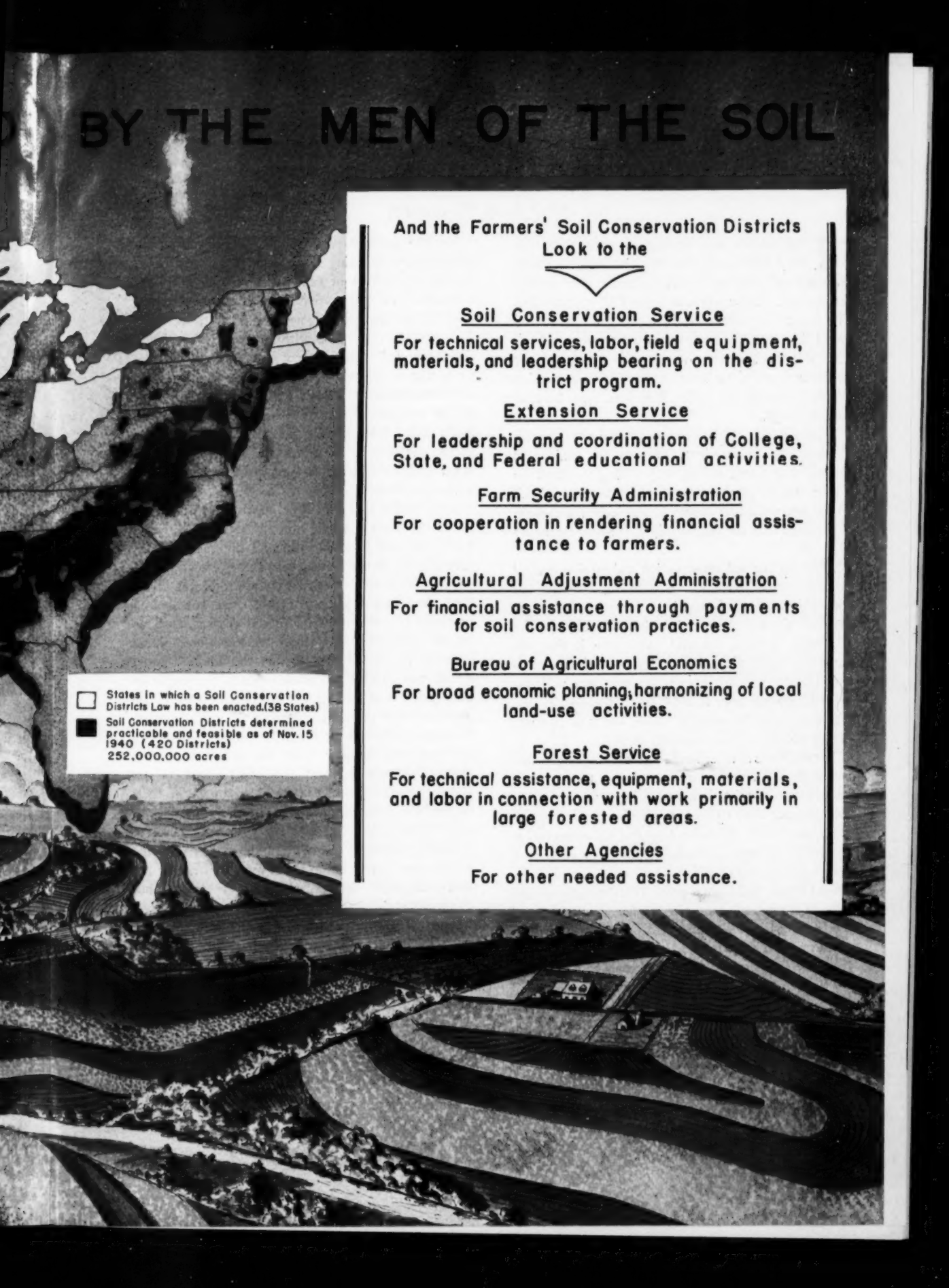
For broad economic planning, harmonizing of local land-use activities.

Forest Service

For technical assistance, equipment, materials, and labor in connection with work primarily in large forested areas.

Other Agencies

For other needed assistance.



☐ States in which a Soil Conservation Districts Law has been enacted. (38 States)

☒ Soil Conservation Districts determined practicable and feasible as of Nov. 15 1940 (420 Districts)
252,000,000 acres

PUTTING THE DISTRICT IDEA TO WORK ON MICHIGAN'S LAKE SHORE

BY MELVILLE H. COHEE¹

"THE farmers have realized for some time that they were confronted by some serious erosion problems and because of this realization they formed the district. Cooperation is beyond all expectations. The farmers are anxious to help plan their farms and do all they possibly can to help the program along." This statement appears in an early report of the governing body of the West Ottawa Soil Conservation District, covering the period from January 1, 1939, to June 30, 1939.

"The attitude of the farmers toward the program continues to be excellent. Farmers are anxious to become cooperators and are very willing to accept the responsibilities placed upon them by the farm plan." These two sentences appear in the second paragraph of the report for the period July 1, 1939, to December 31, 1939.

What are the soil conservation and erosion control problems that moved the farmers, representing approximately 1,400 farm units to vote overwhelmingly in favor of a soil conservation district—802 votes for and only 11 votes against? Why was it that the governing body of the West Ottawa Soil Conservation District met 16 times of its own free will and accord between May 9, 1938, when the district was organized, and December 31, 1938, and 6 to 10 times during each succeeding 6-month period.

The problems of these land owners and operators had not originated a mere year-or-two before the State soil conservation districts law for Michigan was passed in the spring of 1937 to become effective on October 19 of the same year. Their land-use and soil conservation problems had been accumulating for many years and, unfortunately, the people of what now constitutes the West Ottawa Soil Conservation District were not the masters of regional and national influences and general economic conditions that were causing serious erosion problems in their part of Michigan. The farmers do recognize and admit that they had some part to play in the abuse of their lands—they were the uninformed users of the soil. Today they are starting to correct, insofar as it is within their ability, those unwise land-use practices that allowed the wind and rain and elements of nature to mutilate their soils and destroy productivity.

¹ Chief, program procedures division, Soil Conservation Service, Washington, D. C.

Yes, the problems which these people are so enthusiastically attacking today go back a long way, as we reckon periods of time in America. They are exemplified at their worst by frequent references, made by members of the governing body, to the more than 30,000 acres of land within the district which is "on the move." One need not go outside this particular district to appreciate the seriousness of soil erosion in the southwestern part of Michigan: Seventy miles to the southwest, still in Michigan, buried in the sands is the town of Singapore; and at an equal or greater distance to the north and northwest of the West Ottawa district, farmers are facing the same serious problems.² Altogether too few people in this country realize that soils may "move like mountains" before the strong winds, literally covering all vegetative life, and as certain diseases kill their victims gradually, so do the moving soils slowly crowd people out of their homes whether they are rural folk or urban. And just as definite as are these outstanding examples of concentrated localized erosion, such as buried Singapore, so is there a deep-rooted effect upon society, will be throughout the whole country if from east to west and north to south the people do not rise up, as in war, against continuation of land-use practices that permit devastation of soil resources. Fortunately, for the land and the people, landowners and operators familiar with the soil conservation district philosophy,³ and the effectiveness of its approach, seem to feel that they now have at their disposal the "machinery" and ambition to "wage war" on "old man erosion."

The beginning of the obliteration of such thriving community centers as Singapore goes back nearly 100 years. Farmers, lumbermen, and in general our American social system had not even begun to appreciate what would be the consequence of the wholesale removal of timber in the west lake-shore area of Michigan—and for that matter, in other parts of the country—without foresight to the future erosion problems.

The love for the soil and appreciation of its proper use is today well beyond the embryonic stage in America; but it has not yet developed to that point

² Taintuntian to Singapore, by H. H. Bennett, SOIL CONSERVATION, September 1940.

³ Self-Governing Principles of Soil Conservation Districts, by Melville H. Cohee, SOIL CONSERVATION, December 1940.

reached so long ago in many parts of central Europe. Experiences have proved, in the older countries, that local community interest, with wise administrative management provided through appropriate governmental tools of regulation, will bring not only appreciation of the economic benefits from soil conservation, but also a certain stamina of the social system that enables it to withstand the strains of economic misfortunes.⁴ There is no doubt whatever that the social machinery that has been set in motion through the soil conservation districts will do much more than serve merely as preventatives of future "Singapore tragedies."

But specifically, what are the tangible problems facing the people in the West Ottawa Soil Conservation District and how does the district, as such, provide an avenue of solution? First of all, it should be remembered that this district, like all others in the country, is a self-governing, autonomous organization with powers germane to any governmental body that is corporate and politic and a subdivision of the State, but in this instance such powers are specifically designed for "the conservation of soil and soil resources of the State, and for the control and prevention of soil erosion . . ." Of the 132,152 acres in the district, only about 12 percent have been considered by the governing body as first- and second-group agricultural lands in its present condition. When the land in the district was considered further to determine its possibilities for intense agricultural use, it was found that approximately 42 percent of it was mostly nonagricultural. As of March of each year, the time of settlement for taxes, 35 percent of the land in the district was tax delinquent for 1935, 26 percent for 1936, and 25 percent for 1937. Over the past 40 years, corn yields had dropped to an average of 20 bushels per acre; rye to an average of 10 bushels per acre; wheat to the low average yield of 15 bushels per acre, and oat crops had fallen to the average yields of only 25 bushels per acre.

Farmers of the district had come to realize that their sandy soils could not longer endure the erosion abuse to which they had been subjected. As is frequently the case, the agriculture of the district was not of a type to afford adequate living standards for the farm operators and their families while yields remained at such low levels, and thus it was not unexpected that the extent of tax delinquent land should amount to such sizeable areas. Nevertheless, the land owners and operators believed that if they could stabilize the soil and rehabilitate it, then the communities could

again become self-supporting and perhaps prosperous. In some parts of the district many shifts in land use should be made; the district governing body, with the land owners and operators, generally recognize this necessity and are anxious to make those necessary overall adjustments that will facilitate the changes in cultural practices essential to control erosion and at the same time retain or improve the economic conditions of farms and other units.

The governing body of the West Ottawa Soil Conservation District, called directors under the Michigan soil conservation districts law, recognized at the outset of their operations, in August 1938, that even though the farmers were enthusiastic about the soil conservation and erosion control work, they still needed specific information on how to go about the job. The directors, therefore, provided in their work for district operations that sufficient educational work should be carried on to acquaint the farmers within the district with the soil erosion and conservation problems involved, the proposed district plan of operation, the progress and results of district work, and the provisions of written agreements embodying individual farm plans to be entered into between the district directors and the individual land owners and operators. In this part of their work the directors planned to call upon the Extension Service, especially through the county agent and the extension soil conservationist.

Furthermore, at the outset of district operations, the directors anticipated that organized farmer groups and committees would be needed to assist in developing community interest, arrange for proper meeting places for the local groups of farmers, assist in notifying farmers regarding such meetings and activities, and in holding tours, field days, etc., and assist in other ways in furthering the district program.

The directors planned that other special types of assistance to the district, particularly that from the Soil Conservation Service, would be used for direct assistance to land owners and operators in preparing individual farm conservation plans. These plans take into account not only each acre of the farm but the erosion control practices essential to a soil-conservation program for the farm as a whole and for the community. The district needs as well as those of the individual farm should be considered in making the farm plans. The directors also recognized in their planning that several other local State and Federal agencies could assist in the big task confronting the people of this district.

Fortunately the land owners and operators of this district had a real understanding of their problems

⁴ Soil and Men, by Carle C. Zimmerman, Professor of Sociology, Harvard University. Land Policy Review, July-August 1939.

even before they organized, and the county agricultural agent had appreciated the needs so that he was able to help greatly with the work of the county planning committee. During the winter of 1936-37, this group determined that about 50,000 acres of land within the district was badly in need of immediate attention, and they agreed that a real reforestation program was necessary in order to control erosion on so large an area. Since the members of the governing body of the district had worked with the planning committee before the district was organized, they were in an advantageous position to tackle their undertakings. Furthermore, the county agent had been successful as early as 1934 in getting the county board of supervisors to appropriate \$50 for use in establishing a few farm seedbeds whereby the farmers could produce their own seedlings for the reforestation of their blowing lands. Despite the fact that of the three beds established from this small appropriation only one came through about 30 percent, the idea had not died—the damping-off disease which had ruined two of the seedbeds and two-thirds of the other did not “dampen” the interest of the local farmers and the county agent.

In the fall of 1935 the county board of supervisors appropriated \$75 more for seedbeds, and with this money 16 beds were started and to a considerable extent were successful. More important than the actual success of the seedbeds was the fact that the local leaders now became imbued with a greater will to carry on a broad program. The conservation committee of the county board had become vitally interested and after a thorough examination and review of the entire land use and erosion situation of their local territory the board of supervisors in the fall of 1936 appropriated \$1,500 for use by the county agent and his followers in continuing their reforestation and erosion control program. Thus it was possible, in 1937, that a real nursery be established. About 1,000,000 seedlings were grown in this nursery with great success and the trees were ready for planting in 1939 and 1940.

While all of this work was going on in West Ottawa County, State agricultural leaders had not been idle in working toward the preparation and passage of a suitable soil conservation districts law for Michigan. It is worthy of real note that while the State senate committee on conservation was considering a soil conservation districts bill, the West Ottawa County agent and the conservation committee for the county appeared before the State senate committee on conservation urging the members to sponsor a soil conservation bill. Later the same county people appeared before

the senate committee and urged them to favor enactment of the soil conservation districts bill which had been introduced into the legislature. The Michigan bill was enacted in the spring of 1937. The many local, State, and Federal influences leading toward the successful operation of this district and others is appreciated by the farmers and usually most gratefully so. For example, at each of the pre-district educational meetings sponsored by the Extension Service a member of the county conservation committee appeared on the program and discussed the need for a district.

The district started operations in the early fall of 1938. Less than 1 year later, all concerned agreed that it would be most appropriate if the district would take over the county nursery activities—the district had the appropriate powers and the suitable organization to make the nursery the going concern the county agent, the county board of supervisors and the local farmers had long wanted. On June 26, 1939, therefore, the district directors officially revised their district work plan and added the following provision: “It is the aim of the district, as the plan of work and operations actually develop, to establish and maintain transplants and seedbeds to facilitate handling of stock for the district, as well as the establishment of a district nursery, such nursery to be of sufficient size to produce approximately 1 million (1,000,000) seedlings, and requiring sufficient technical information as is necessary to produce said seedlings.” The county “turned over” its interest in a nursery to the district and has given its financial and other support to the district. The district nursery is established in a centralized place and the county nursery has since been discontinued.

The district has assisted owners and operators of 306 farms in preparing and starting to put into operation erosion control and soil conservation plans for their farms. These farms include 24,477 acres. An additional 200 farms are under consideration in some form, as their owners and operators have petitioned the district for assistance in putting into operation on their farms the appropriate phases of the district-wide program. Many other farmers are participating in the general educational and less intensive type of work of the district. The directors believe that were resources available to enlarge the staff of the Soil Conservation Service men assigned to the district, to enlarge the nursery, complete the details of surveys, etc., the number of petitions by farmers would jump quickly. The farmers in general realize that all farms in the district cannot be considered by the directors and their helpers at the same time and in the detail

necessary for the making of a worth-while and complete plan. Because of this understanding the directors have not been pushed for assistance.

Over 2,600,000 trees have been planted on approximately 18,000 acres. For this work, the district was able to supply about 50 percent of the labor through the facilities of a C. C. C. camp made available to assist the district by the Soil Conservation Service. The other 50 percent of the work was done by the farmers. In 1939, before C. C. C. assistance was available, the farmers planted 750,000 trees and shrubs.

In each instance the landowners and operators have entered into cooperative agreements with the district, agreeing to establish a practical erosion control program for their entire farm, and specific farm conservation plans for such programs are made as a basis for these agreements. Approximately 50 miles of 1-, 2-, 3-, and 4-row coniferous windbreaks have been established. Some 2,600,000 trees have been made available for this planting program at a low price: 1,400,000 through the district; 350,000 through purchase by landowners and operators from sources outside the district; 850,000 through grant by the Soil Conservation Service. In addition, a total of 200,000 shrubs for wildlife food and cover have been planted.

The farm seedbed program has been expanded by the district; 22 beds were established in 1939, and 69 in 1940. It is believed by the directors that some 10,000 trees may be produced from each bed. The county nursery, referred to earlier, supplied 200,000 seedlings which were sold by the district to cooperators and 800,000 seedlings which were transplanted into the district nursery. The district nursery, originally equipped with a seedbed capacity of 1,000,000 has been expanded; a second part was started this year, with a 2,000,000 capacity so that when in full production, if expectations are realized, the nursery will have an annual net production of 2 million trees.

The establishment of the district nursery and keeping it in operation has not been an easy matter for the directors. They were short of funds and what they had was mostly spent for the installation of the nursery. There was a need for weeding, lifting, transplanting, and other operations that required labor. Nevertheless, when great difficulties arose, the dominant will to succeed and the spirit of "finding a way" prevailed. The local sheriff was consulted with reference to labor assistance for the district from the men confined in the county jail. The source proved fruitful—166 days (8-hour days) of labor were given to the district. At another period when the district was destitute of labor and funds, the Olive Ladies

Club, a church organization, donated their services for helping carry on work in the nursery. This, plus other contributions, amounted to a total of 42 days of labor. The bulk of the work for operating the nursery came through the regular channels of hired labor, 540 days of this type being expended. Further evidence of interest in the district program is manifest in that the land on which the nursery is located was donated by one of the district directors, Frank Garbrecht. Mr. Garbrecht also gave team and tractor power, and tools needed in plowing and fitting the nursery. The cost to the district for installing the nursery was \$1,050.

The nursery operations have perhaps constituted one of the district's most important operations exclusive of the farm planning work. With 34,000 acres of active blow areas and 25,000 acres of potential blow areas within the district, it is easy to understand why the directors wish to move forward on a comprehensive tree-production and planting program. Since the landowners and operators are low on resources for "out-of-pocket" expenditures, it is essential that they obtain nursery stock at a very low cost. Furthermore, there is within the district a considerable area of publicly owned land such as tax delinquent State-owned lands, county-owned lands and others needing reforestation, and the district is making arrangements to lease appreciable areas in order to stabilize the erosion on them. In such a program the district needs its own planting stock.

Another important part of the program of the district involves the stabilization of erosion on cropland areas. A good crop rotation and cover crop program is laid out by the governing body of the district. The soils are somewhat acid and the addition of lime or marl is necessary to facilitate the vegetative program. The directors knew that marl was available in the district and pits were possible. They contracted with the owners of the supplies to allow them to take out marl; this was in turn sold to the farmers at cost plus transportation. A small additional charge of 10 cents per yard was added to cover general expenses of the district in this undertaking, and was paid by the cooperators when buying the marl. Some 6,000 cubic yards of marl have been supplied by the district to those cooperators needing it. Three marl pits are being operated by the district to carry on this worthwhile phase of their program, and to meet the total needs additional hundreds of cubic yards will be distributed. To initiate this work it was necessary for the district to borrow \$400 and the local banker was willing to assist in supplying these funds at a very reasonable rate of interest.

THE MUNSON CONSERVATION DISTRICT—AN EXAMPLE OF DEMOCRACY AT GRASS ROOTS

BY KENNETH S. DAVIS¹

EIGHTY years of hard farming have left their marks on the land of Henry County in northwestern Illinois. Gullies crease hundreds of fields. Topsoil is piled deep at the foot of most cultivated slopes; it is wearing thin up above, even though most of the slopes themselves are as yet ungullied. Soil productivity is quite obviously on the downgrade.

Not that Henry County is poverty stricken, or even on the verge of becoming so. Far from it. As a matter of fact, it is one of the richer Corn Belt counties, with a vast wealth of fertile soil still intact. The Henry County Farm Bureau, with 1,370 members (approximately half of the total number of farmers), is one of the leading bureau units of the State—and in Illinois the agricultural prosperity and progressiveness of a county usually can be measured by the strength of its farm bureau. But the fact remains that soil erosion is gnawing at the base of the county's farm wealth, and a growing number of local farmers are aware of it.

Out of this local awareness, or because of it, has emerged the Munson soil conservation district, organized by the farmers themselves under the terms of Illinois' conservation district law. The district, organized in January of 1940, takes in 240 farms comprising 34,782 acres in almost the exact center of Henry County. Through the district organization, conserva-



William Krantz, first farmer to sign a cooperative agreement with the district: "We'll all be doing this in a few years, so we may as well learn now to plant on the contour."

tion practices are being spread—not as rapidly as some of the farmer members would like, but with increasing momentum.

The farmers who direct the district are just beginning to glimpse the endless possibilities for profitable group enterprise in the new organization. They are just beginning to glimpse, likewise, the role the districts may be called upon to play with regard to agriculture in national defense, in post-war reconstruction, in the development of a sound national economy. But ideas are growing in their minds, which if properly nourished will bear rich fruit.

A farmer by the name of Gilbert Brown, for example, remarked to me recently as follows: "The district is still in the educational stage. At the present time we have 33 agreements with farmers, but that is not an accurate measure of farmer interest in the district work. The interest is there, and growing." Mr. Brown operates 310 acres near Geneseo, is chairman of the Munson district board of directors, a graduate of the University of Illinois, and an outstanding community leader.

There is a growing feeling also that the district is in fact a farmer's organization, and not in any sense an artificial set-up imposed upon local people to facilitate the distribution of Department of Agriculture programs. Brown commented on that fact, with approval: "It takes time, of course," he said. "But farmers in this community are taking hold in good shape. It is their program and they like it."

In Brown's opinion, the land-use capability maps constitute an important forward step in education for wise land use—this because farmers can understand the colored maps, whereas detailed soil survey maps are bound to remain "Greek" to most of them. After all, he pointed out, it is the use of land with which the farmer is concerned. Brown was even optimistic with regard to the possibility of farmers being trained to make their own land-use capability maps—after he had thought it over for a moment. At first he was doubtful of the practicability of the idea; then he recalled the rather complicated layouts that have been handled successfully in recent years by farmers serving as A. A. A. committeemen: "If farmers can do that, maybe they could make their maps—their own maps," he said. "I'm inclined to think they could, with proper training."

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¹ Associate information specialist, regional division of information, Upper Mississippi Region, Soil Conservation Service, Milwaukee, Wis.



Hogs and erosion versus hogs and clover—contrasts found in the Munson soil conservation district. The view of "pigs in clover" is on the Gilbert Brown farm. Mr. Brown is chairman of the district directors. He is growing less corn and more legume hay, as part of his conservation plan.

(Continued from p. 220)

The lack of soils maps is one of the things that slowed down district agreement sign-ups during the past year, and Brown could see that the mapping problem is bound to become increasingly serious as the district idea is accelerated throughout the country. "Obviously, something will have to be done," he said. "I believe it is up to us, the farmers, to do it, or help do it."

John R. Johnson, who owns 348 acres within the district and 120 acres outside, is another member of the Munson district's board of directors. He is pleased with the way the district idea is taking hold, but he would like to see more cooperators.

"We'll have more next spring," he said. "I look for a spurt in sign-ups, along about oats-planting time."

Weather conditions during the season just past are at least partly responsible for the present slight lag in district sign-up, Johnson thinks. It was a dry season, with no really heavy washing rains, so that neither soil erosion nor the effectiveness of control measures showed up in the fields. Next year is likely to tell a different story, although, generally speaking, drought conditions are becoming more and more frequent in Henry County. In Johnson's opinion, it is the way the land is being used that is responsible for the condition. To make greater use of the soil as a reservoir for water is one of the chief aims of the district program.

"The water table is down several feet," Johnson said. "I had to lower my well last year, and several of my neighbors have had to do the same thing. We've been letting the water run off the land, instead of soak in."

More grass, less corn; contour tillage instead of straight rows; more trees on steep slopes; terraces—all these are raintraps, by which rain may be harnessed and put to work growing crops. They are devices for raising the water table. "It will rise once we get the land in the district control program," declared Johnson. He knows that the district is now in the educational phase, but he doesn't think it will be difficult to "sell" the erosion control idea to his neighbors. Demonstrations will do it, and each cooperator's farm is, of course, a practical demonstration. "It can be proved that soil conservation pays out in dollars and cents," the director asserted, and cited his own personal experience as evidence.

Several years ago, Johnson bought a 160-acre farm within what now constitute the boundaries of the Munson district. He paid \$22 an acre for it. In cooperation with a Soil Conservation Service C. C. Camp at Galva, Ill., he worked out an erosion control



John R. Johnson, a director of the Munson soil conservation district, found that soil-saving practices doubled the value of his 160-acre farm.

program for the farm including contour tillage, a revision of cropping systems, complete change of field shapes and consequently of field fences, and soil treatments with lime and phosphate fertilizer.

"Putting that program on the place cost me about \$670—\$250 for lime, \$100 for phosphate, and \$320 for new fencing and removal of old lines," Johnson reported.

In other words, the program cost about \$4.20 an acre—and it boosted the value of the farm at least 100 percent, by Johnson's own conservative estimate. He said that he would "think a long time" before he accepted an offer of \$45 an acre for this farm—a farm which, 3 years ago, was worth barely \$22 per acre. Conservation planning alone has made the difference!

"Certainly it should not be hard to sell such a proposition," Director Johnson said.

He is anxious to have the district carry out individual practice demonstrations as part of the district program. Soil treatment demonstrations would be especially valuable in the Munson district, he thinks, and he is already planning such work—has selected the field and has a well-developed procedure in mind. The board will consider the plan at an early meeting.

But with regard to the larger significance of the district program—the role which local districts might play in an agricultural economy changed by the impact of war and shifting trade relations—neither Johnson nor Brown has as yet a thoroughly developed understanding. Johnson, to be sure, has carefully considered the possibility of imposing land-use regulations

within the district and is not opposed to the idea in principle, provided it is carried out democratically (as it necessarily would be, under the terms of the district law) and is used only as a last resort. Both men are agreed that such regulations, if they become absolutely necessary, should be imposed by local people through local organizations rather than by Federal or State officials far removed from the land.

The need for *planning* agriculture—to absorb the shocks which either a greatly reduced or greatly expanded export trade may bring to our farm economy in the next few years—is apparent to both men. They have an idea that the districts might play an important part in making and applying those plans; it is but the germ of an idea, really, but the fact of its presence is significant enough.

It is significant because, ultimately, the future of American agriculture must be determined at the grass roots and by the men on the ground if our farm problem, in its growing complexity, is to be solved according to the democratic ideal. Every evidence of mental apathy on the part of farmers with regard to their economic and social problems is one more danger—and every evidence of a growing social awareness is a reason for hope. Evidence of hope in the minds of such men as John Johnson and Gilbert



The owner of this land recently paid \$30 an acre for it. The upper part of the field is abandoned—ruined by erosion. The topsoil stripped from the sloping field has been piled deep on the bottomland below, where corn made 60 bushels per acre last year.

Brown and many others like them, is vindication enough, were there no other, of our democratic ideal of government, that *the government is the people*.

The Montesano-Elma-Oakville Soil Conservation District in western Washington is doing an excellent job of bank protection on the Wynoochee River. The eroding bank is covered about 2 feet thick with a mat of spruce and hemlock boughs held in place by poles wired together and anchored to blocks of concrete deeply set below the mat. A long and compact floating bundle of alder, maple, and willow brush about 18 inches in diameter, known as a facine, is anchored with cables along the bank to reduce the cutting action of the river.

Twenty-one men of camp C. C. C.—S. C. S.—12 at Montesano completed 500 feet of this work in 13 days. Grays Harbor County has been supplying \$500 per month to provide material for doing such work in this 300,000-acre district. The Soil Conservation Service is furnishing technical help and supervision principally. Such cooperative work stops the Wynoochee and other rivers from eating away the bottomland fields that are vital to successful farming in this area, and protects highways from being washed out.

Eleven soil conservation districts in Georgia are receiving assistance from the Division of Wildlife of the State of Georgia under a memorandum of understanding between the individual districts and that State agency. The help rendered consists of such items as the following: Assistance in conducting survey studies, field tests, etc., of a biological nature; seed and plants for, and aid in, establishing seed source plots; participation along with other agencies in carrying out the wildlife phases of an educational program, especially with sportsmen and civic groups. All such assistance is provided in accordance with the respective district's program, work plan and farm plans of the district and individual farmers.

A similar cooperative arrangement has been entered into between the Southside Soil Conservation District in Virginia and the Virginia Commission of Game and Inland Fisheries. The same kind of cooperation is being favorably considered by the Commission in regard to other districts in Virginia. The indications are that similar cooperative work will soon be effective in Mississippi and a few other States.

THE LAND COMES FIRST

By WALTER W. JOHN¹



Lester Hass has faith in the land, and in his ability to make a good living from it.

LESTER Hass practices the idea of putting first things first.

When Dave Davidson and I stopped to interview him on a cold day last November he and his dad were digging a trench so that he could pipe water from his cistern into the barn. He might have done that work last summer when the weather was more pleasant. But during those pleasant summer days, young Hass was very busy making sure that his land was protected against erosion.

As he expressed it, "I believe in taking care of the land first and fixing up the buildings as I can get to them. If we don't protect the land, we are not going to need the buildings."

Lester Hass is a young farmer in Winona County, Minn. He has faith in the land and in his ability to make a good living on it—that is why he purchased the 169-acre farm and took his bride there to build a home. George Hass believes in his son's ability; he helped him make the deal for the adjoining farm. Together they had put into effect a complete soil conservation plan on the "home" farm and they knew what results to expect from such practices.

On October 25, 1939, Lester had walked into the office of Dave Davidson, conservationist of the Burns-Homer-Pleasant Soil Conservation District, and said, "I bought a farm today. I want you to come out and help me set up conservation on it."

¹ Associate information specialist, Upper Mississippi Region, Soil Conservation Service, Milwaukee, Wis.

Dave went, helped him stake out two or three contour lines, advised him on a rotation and field plan, and encouraged him to go ahead from there. He did go ahead with it, faster than anyone thought he could. Before the ground froze, he had all of the 60 acres of cropland plowed on the contour—the exact contour, for he was particular about having the rows level. In the spring he planted corn, oats, and alfalfa in strips where lime had been applied at the rate of 2 tons to the acre.

He fenced about 50 acres of woodland that guarded some steep slopes. All fences around the cultivated fields had been removed before the fall plowing, and last summer they were rebuilt on the contour. Three pasture fields of about 15 acres each were laid out and pastured alternately a week at a time with his herd of 10 Holsteins. His young stock was kept in a valley pasture where they had access to spring water. Gullies had been plowed in and seeded and a good sod established in all waterways.

Within the year, Lester Hass had applied on his farm a complete conservation program, most of which he had planned without help. It was then that he had time to do some work on the buildings.

"The whole place was run down," he told us. "Renters had plowed up and down hill so long that the land was getting in bad shape. The buildings aren't good either, but I can fix them up." Apparently a little paint and repair work will put the buildings in good condition for they seem to be sturdily built.

Mrs. Hass has redecorated their home comfortably and attractively. Under the R. E. A. program they have wired both house and barn. Lester wants to remodel the barn before long so that it will accommodate 30 dairy cows, and, as soon as he can afford it, he plans to install milking machines to lighten the work load.

What do the two Hass men think of conservation farming? George Hass looked up from trench digging long enough to say, "I think farmers are touched in the head if they don't do it." In Lester's opinion, the Government ought to force farmers to stop plowing up and down hill. "On the other hand," he reflected, "these soil conservation districts are doing a real job, and farmers will keep up that kind of work because of its voluntary aspects. Some are slow to take to new ideas, but they soon see that this work pays. Soil



Aerial view of the 220-acre farm of George Hass, near Winona, Minn. After helping his father protect this "home" farm, Lester Hass bought an adjoining farm and put a complete conservation program on it in one year.

conservation is the biggest thing the Government has done for farmers."

Young Hass is number 70 on the local draft board list. He is ready to do his part in the defense program and believes he can help greatly by taking care of his soil. "We must have guns and planes," he said, "but we can't do anything without the soil."

The topography of the Hass farm is representative of hundreds of farms along the "breaks" of the Mississippi River. The cropland lies mainly along a ridge and grades steeply into V-shaped valleys. The land-use classes now fit closely the varying degrees of slope. Lester was quick to understand the importance of colored land-use maps and he has carefully followed the maps in putting the information to use on his own farm. "When you farm up and down hill you have crops running through two or three different classes of land," he explained. "By putting the rows on the level, each crop will fall nearly in one class. These contour rows hold more moisture on the fields." Father and son have been active in group planning meetings conducted by district supervisors and technicians. "A farmer at one of these meetings told us we were crazy to plant crooked rows, but we soon put 'kinks' in his argument," George Hass remarked to us.

George and Lester Hass first saw strip cropping and contour farming when they were visiting friends in Iowa about 4 years ago. They have been trying to

protect their land against erosion ever since that visit. Lester's plan is to build up his pastures, grow considerable amounts of alfalfa, and feed all crops to his dairy herd. "Alfalfa and pasture are my best-paying crops," he said. "They keep working for me without much work on my part or much cost. Corn and hogs take too much out of the soil. I'm going to stick to milk cows." He is now getting about \$7 a month per cow from cream sales, and he feeds the skimmed milk to calves. He hopes to increase that income to \$9 a month as he builds up his herd by "weeding out the ones that don't pay."

Contour farming, strip cropping, and a 5-year rotation are holding soil and moisture on the cropland which stretches out along a narrow ridge; good pastures guard the "in-between" slopes; timber prevents serious erosion on the steeper slopes below. Buildings and fences receive attention, all in their time, on the Hass farm.

Members of the Lions Club at Lineville, Ala., in the Piedmont Soil Conservation District, purchased 100 pounds of kudzu seed and distributed it in 5-pound lots to 20 4-H Club members. Fertilizer was also supplied for these plantings. This should result in the production of from 200,000 to 400,000 kudzu plants in the Lineville area and 400 to 800 acres of new kudzu plantings should be established.

WHY NEW HAMPSHIRE NEEDS A SOIL CONSERVATION DISTRICTS LAW

BY J. L. HADDOCK, K. E. BARRACLOUGH, AND FORD S. PRINCE¹

WE, in New Hampshire, have recognized many farm problems in the past and have worked toward their solution, and through it all we have boasted with considerable pride that soil erosion was not a problem here. But, little by little, especially throughout recent years, those people who are alive to farm problems have come to realize that soil conservation is not limited to preventing dust storms and gullies, but that its ultimate objective is much broader and more comprehensive in that its purpose is the maintenance of permanent productivity of the land while the land is being used for maximum economic production. This implies the utilization of land according to its best capability, and includes land-use planning directed toward better cropping and woodland-management practices. With this understanding of soil-conservation objectives, it is not difficult to see the relationship of many of the State's farm problems to soil conservation practices.

New Hampshire forests and woodlands have become increasingly less productive. For many years clear cutting and stripping have been practiced with no thought of reproduction. There were heavy timber losses during the hurricane of 1938; and now a new problem is before us in the increased demand and price for pulpwood and lumber, or, in other words, the temptation to cut the young growing stock. Some of the men who represent the lumbermen, and those interested in the social and economic welfare of the people of the State, have arrived at a place in their thinking where they are discussing the need for ways of securing woodland-management regulations in order to prevent injurious cutting practices and to increase the productivity of the private and commercial woodlands and forests.

New Hampshire has a total area of 5,779,840 acres, and over 80 percent of this land is wooded. This makes forest management the major land-use problem particularly in view of the fact that the timber resources are so badly depleted that it has become highly impractical for private capital to retain many of the tracts. This situation has been accentuated as a result of the hurricane of 1938.

Broadly speaking, there are but two types of forest

land in New Hampshire, areas that have been once or several times culled but never cleared, and lands that have reverted to woodlands after a century or more of use as farms. Since 1900, both types of forest have been logged by clear cutting, leaving a heavy debris of slash. In some sections fire has further depleted the soil resources. The immediate effect of this treatment has been a steady falling off in composition of new timber crops after cutting. The supply of seed-bearing trees of satisfactory age and species has become less and less, while light-seeded inferior species, such as grey birch, popple, and pin cherry, which are better adapted to survival on exposed areas, have constantly increased. Thus, even where sufficient desirable reproduction still is maintained, as in older mixed stands such as culled remnants of virgin forests, either the seeding of weed species or the excessive development of hardwood stump sprouts steadily pushes out the desirable elements of the forest.

The situation relative to the 747,434 acres of open land, or the 12 percent of the total land area that is used for pasture lands and the growing of crops, is somewhat different from that of the woodlands. Progressive commercial farmers have kept their open lands in a fair state of production, although many of them have neglected their pastures. Unfortunately, the number of commercial farms is a small part of the total 17,000 farms of the State. In many sections, especially in the hill areas, farm lands are still reverting to woods rather rapidly. Thousands of acres of hay lands have "run out" as the demand for hay has diminished. Many abandoned farms have become property of summer people who are not dependent upon the soil for a livelihood. Generally, these people do not work the soil, although a fairly large number do farm on a commercial scale and give considerable care to building up the soil. Recently, woodland management has interested these people.

The floods of 1927 and 1936 directed our attention toward the more spectacular, though possibly not the most important, phase of soil erosion in New Hampshire. During these floods, many acres of valuable farm lands were torn from river banks of some farms and the infertile, sandy fractions of the soils deposited on formerly fertile and productive terraces of other farms. Groups of farmers, alarmed by the loss of large segments of their small acreages, and almost

¹ The authors are extension agronomist and extension forester of the New Hampshire Extension Service, and professor of agronomy of the University of New Hampshire, Durham, N. H., respectively.

helpless to cope with so formidable a foe, appealed to the State and Federal agencies for assistance. Invariably these groups were told, "Your cause is just but we can do nothing for you." It may not be out of place to outline briefly the experiences of one farmer group in their attempt to secure assistance.

The county agent was asked to help them to locate some organization that would render assistance. The W. P. A. reported that some responsible governmental unit must sponsor the project and assume liability for all damage which might arise. This was not feasible since the farmers affected belonged to several towns and made up a small minority in each. The matter was next referred to the Governor through representatives of the group. The Governor authorized an investigation and the investigators recognized the importance of the situation and promised to bring the matter to the attention of the Governor and council. Nothing was heard from their action. The Soil Conservation Service was asked to investigate and did. It was acknowledged that conditions in this area were similar to those in the Winooski Valley in Vermont, and justified a demonstration project. Since the Winooski project was established as a demonstration and funds were not available for work in other river valleys, it was recognized that protective measures could not be undertaken until after the enactment of a State districts law empowering the farmers affected to set up a soil conservation district of their own.

Comprehensive surveys of upland and riverbank erosion, in New Hampshire, have not been made, although both are now recognized as important problems. We can say that the compact soil types (those with hardpan) show slight erosion on slopes of 0 to 5 percent, moderate erosion on slopes of 5 to 10 percent, and severe erosion on slopes of 10 to 15 percent. The best soils are cultivated most frequently and hence it is these best soils that suffer most severely from sheet and gully erosion. It is estimated that, in the Merrimac watershed alone, approximately 150,000 acres show slight sheet erosion with occasional gullies and about 18,000 acres show moderate sheet erosion. From 5 to 10 percent of the riverbanks of the Connecticut, Merrimac, and Saco show serious erosion.

To preserve the present farms as working units, we can scarcely afford to lose, by erosion or by general neglect, lands now comprising parts of the farming units. Soil conserving practices are needed to conserve the soil, prevent destructive floods, and stabilize farming operations in the fertile river-valley lands.

Farmers on the hill lands, who grow potatoes and other cultivated crops intensively, are already becoming very much aware of erosion, and a few have adopted contour farming practices, while in the more serious instances terraces and diversion ditches have been constructed to control run-off and erosion. Terrace and diversion ditch construction requires the services of a trained engineer, and any phase of contour farming can be established more effectually with the help of skilled technicians. The average farmer cannot afford to employ help of this sort, but the passage of the soil conservation districts law, to be followed by the organization and operation of districts in interested localities, would open the door to cooperating agencies through which adequate planning and technical help would be emphasized.

While past and present educational efforts in the State have been a factor in retarding the exploitation of soil resources and have been responsible for increased crop yields on many commercial farms, it has become more and more apparent that a stable economy is dependent upon an arrangement by which all producing lands will produce resources of one kind or another. Tiny islands of high-yielding crop and pasture lands cannot continue indefinitely to support vast areas that are not contributing to the income of the rural areas. Depleted forest lands and idle open areas bring us vacant wood-using plants, unemployment, stranded communities, floods, erosion, human suffering, and the gradual lessening of individual initiative. The situation becomes a vicious downward spiral.

Even the most intensive educational program cannot correct the land-use situation in rural communities, with its trend toward a laissez-faire attitude. Federal and State assistance, so managed as to stimulate people to take leadership in solving these land-use problems, is needed. The tendency to siphon the wealth of rural areas to the large centers of population makes the situation more critical; with such a type of economy, the rural communities must look to the larger units of government for assistance in the solution of their problems.

The land problem is so serious in New Hampshire that people should be given an opportunity to devise means for shifting from a policy of exploitation of soil resources to a program of conserving and developing the resources of the soil. Such a program involves giving landowners every possible practical assistance in accomplishing the objective, such as technical assistance, field demonstrations, and even subsidy in

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Corn in river bottoms was badly hit in the August 1940 flood in western North Carolina.

A ONCE-IN-A-HUNDRED-YEARS RAIN

BY E. B. GARRETT¹

FARMERS cooperating with soil conservation districts in North Carolina watersheds report that in August of 1940 they were given a striking demonstration of the value during flood period of crop rotation, strip cropping, improved pastures, properly constructed terraces, and water disposal systems on their farms. The floods that swept across a large part of the State, in the wake of the Florida hurricane, set new records of destruction as swirling waters of swollen streams spread out over fertile valleys, washed out bridges, inundated manufacturing plants and marooned cities and towns, causing millions of dollars of property damage and leaving hundreds homeless.

In many sections the rainfall that preceded the disastrous flood broke all records for intensity and amount. Beginning on August 11, rains of considerable intensity fell for 2 days over a large area, saturating the ground and sending many small streams out of their banks. The water-soaked ground and already overburdened streams were unable to cope with larger volumes of water from the torrential downpours that followed on August 13, and 14.

Weather Bureau reports from a C. C. C. camp gage

¹ State coordinator, North Carolina, Southeastern Region, Soil Conservation Service, Raleigh, N. C.

at Buck Creek, 13 miles northwest of Marion, N. C., show that 15.8 inches of rain fell during the 4 days, with 9.45 inches in 24 hours after the ground had been saturated for 2 days. At Laurel Springs, 14.68 inches fell during a 5-day period with a peak of 10 inches in 24 hours. C. C. C. Camp SCS-24, at Forest City, reported 10.58 inches during a 6-day period beginning August 11, and similar reports were received from many other sections.

Heavy rains fell throughout a period of 9 days according to a special report on this storm by the Weather Bureau cooperating with the War Department and various agencies of the Department of Agriculture. Most significant is the blunt report from the observer at Elkhaville, N. C.: "Record after 6:15 a. m. of the 13th washed away with the gage during the night of 13th-14th."

As the flood waters rushed down through the watersheds of the Yadkin, the Roanoke, the Catawba, the Cape Fear, the Tar, and the Neuse Rivers they fanned out over fertile farm lands and highly industrialized areas in the valleys. The waters inundated many manufacturing plants, washed out bridges, destroyed highways, flooded homes, and caused untold property losses. The Regional Flood Control

Section reports that damages in the upper Yadkin and Roanoke Basins reached greater proportions than during the great flood of 1916.

North Wilkesboro, a town of 4,000 population, lying 125 miles northeast of Asheville, was one of the worst hit by the flood. It was completely cut off from the world when the Yadkin River, rising to unprecedented heights, disrupted light, water, and telephone facilities. With water everywhere, residents of the town stood by helplessly as two large industrial plants encircled by the flood burned to the water line. Mayor R. T. McNeil estimated that the damages in North Wilkesboro alone would amount to \$2,000,000 and in Wilkes County as a whole to \$10,000,000.

The city of Asheville was forced to draw on an emergency reservoir when flood waters washed out all mains from the city's water-supply. The Southern Railway was forced to reroute trains at Asheville, owing to a landslide at the mouth of a tunnel near Ridgecrest, and two persons were crushed to death by a landslide at Boone.

As similar flood waters spread out over Virginia, South Carolina, and Tennessee, thousands of acres of bottomland corn were covered and made unfit for use. Watermelons that floated out of farmers fields were "fished" from swollen streams by crowds that gathered on bridges to watch the swirling waters, and even pigs and other livestock were rescued as prize catches.

During the unprecedented rains in the watersheds above, tons of fertile soil were washed from unprotected fields; but soil conservation district cooperators, who had developed on their farms various practices designed specifically to hold and improve the soil, reported quite the reverse regarding some of their protected fields. Rains of such intensity and duration are very unusual. In fact, in many sections of North Carolina the rainfall was classified as a "hundred-years rain." It is the intense rains, however, that farmers must guard against, and it is of considerable interest to know how farmland protected by a sound conservation program withstood the intense and continued rainfall of this 9-day period. The answer, as given by the farmers who are cooperating with soil conservation districts, is that a sound conservation program will protect farmland against even a "hundred-years rain."

G. M. Alexander, a cooperator of the Tri-Creek Soil Conservation District in Wilkes County, where the heaviest rain in the State fell in the shortest period of time, with a 6-inch rainfall between 6 p. m. and midnight on August 13, reported that although he lost 15 acres of bottomland corn in the flood that followed the rain, yet very little damage was done to an upland

corn field that was strip cropped with corn and lespedeza. "If the 9-acre field had been in corn without the strips of lespedeza, the loss of soil would have been very heavy," said Mr. Alexander.

Charles Beck, cooperating with the Middle Yadkin district in Davie County, has a small farm of 30 acres under district agreement. All of his land was terraced; he was carrying out systematic rotations and was working all his land on the contour. After seeing how the protective measures withstood the intense rain he remarked that he "would not take a thousand dollars for the soil conservation plan on the farm." He reported in detail as follows: "I found no damage caused by the rains. A 700-foot grassed waterway carried the water from terraces in one field without any damage to the field or waterway. Before the plan was worked out for my farm, I did not have any terraces or rotations and my land was washing away even during ordinary rains. I don't like to think of what would have happened to my farm if it had been in that condition when these rains came. Land next to my farm, where no conservation practices were being used, was badly damaged by the rains."

Clarence Everhart, who has been a cooperator in the old Lexington demonstration project for 5 years, had a well-established conservation program on his farm, with systematic strip rotations, properly constructed terraces, and other soil-conserving practices. A rain gage on the farm registered 3.6 inches during the 11-hour period from 8 o'clock in the evening of August 13 to 7 o'clock the next morning.

"While almost no damage was done on my farm," Mr. Everhart commented, "on a neighbor's farm where there were no conservation practices, recently plowed land was washed away in places to the depth of plowing. Now I can sleep at night no matter how hard it rains, because I know I will not find my land washed away when I get up the next morning."

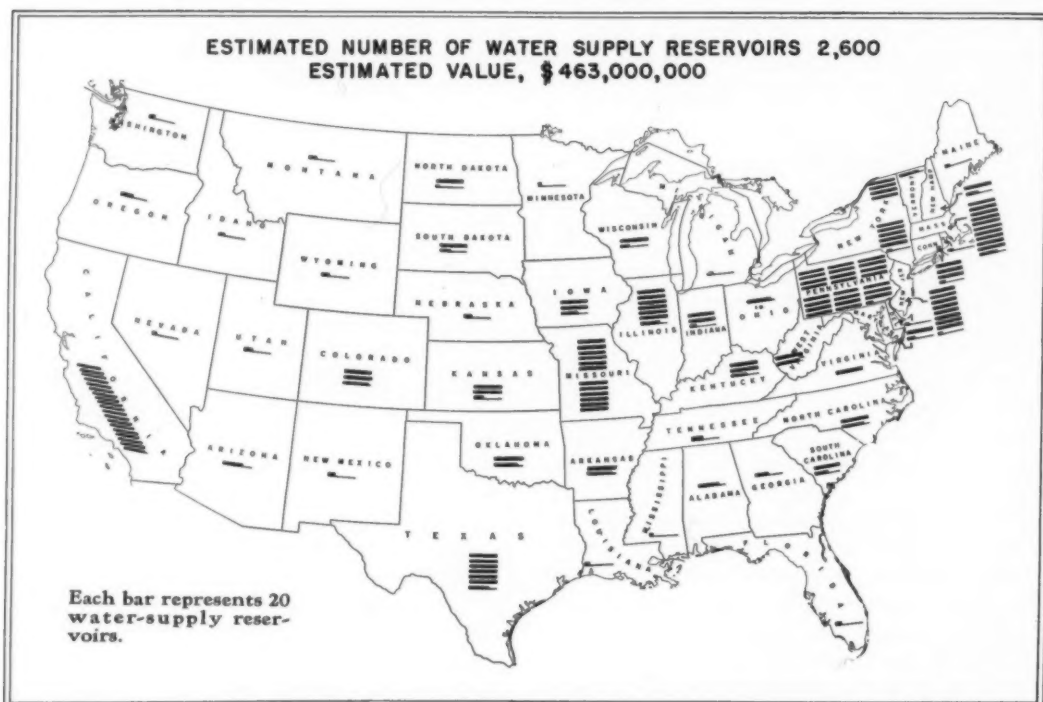
From the western part of the State, in Polk County in the Broad River district, John Arlidge reports that on properly terraced fields on his farm, where he is carrying out a 4-year strip rotation of cotton, small grain, and lespedeza, he "did not lose a bushel of soil" during the intense rains.

In Vance County, in the eastern part of the State, J. H. Brodie, one of the supervisors of the Tar River district, made the following remarks: "At first my tenants were doubtful of the value of establishing soil-conservation practices, but they have found that the hay crops they are producing from the meadow

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PROTECTING RESERVOIR WATERSHEDS THROUGH THE DISTRICTS PROGRAM

BY CARL B. BROWN¹



STORAGE reservoirs for municipal and industrial water supply are among the most valuable water-utilization developments in the United States. More than 2,600 dams have been constructed to impound water-supply reservoirs, at a cost of more than \$463,000,000 exclusive of appurtenant waterworks and distribution lines. Between 15 and 20 percent of the entire population of the country obtains its domestic water from these sources.

Measures being taken today by many of our great cities to protect water-supply sources against sabotage, emphasize their vital importance to the national defense program, indeed to our whole industrial and commercial life. In the *Engineering News-Record* for July 18, 1940, this statement appears: "Mobilization of industry for defense puts a new responsibility on municipal water officials. Probably no resource is more vital in times such as these—nor more vulnerable—than water service. What measures should be taken, therefore, to safeguard this essential service from sabotage?"

Sabotage by foreign agents in the event of war, while perhaps in places a more imminent hazard, will almost certainly be less widespread and less sure in its ultimate effects than another menace which we ourselves create. This is the menace of lost storage capacity resulting from silting caused largely by accelerated soil erosion. "What measures should be taken, therefore, to safeguard this essential service from . . . silting?"

The answer, as supplied by rapidly accumulating evidence, is adequate watershed protection and erosion control. The means for achieving this objective on a widespread scale are now developing for the first time through the soil conservation districts. Heretofore the adequate protection of reservoir watersheds generally was impossible without the purchase of entire drainage areas by the reservoir owners, and this could be done only in occasional instances. Today, however, the districts are providing a legal

¹ Head, reservoir section, sedimentation division, Soil Conservation Service, Washington, D. C.

medium for cooperative effort of urban and corporate interests with agricultural interests in erosion control for the mutually beneficial purpose of conserving farm and range lands and maintaining reservoir storage capacities.

During the last 6 years the Soil Conservation Service has collected sufficient data through reservoir surveys to indicate the magnitude of the reservoir silting problem. Up to August 1, 1940, detailed surveys of 96 reservoirs and reconnaissance surveys of 252 others had been completed. With records on 57 detailed and 16 reconnaissance surveys by other agencies, we now have at hand usable data for 421 reservoirs of all types, distributed through 34 States, out of a total of more than 10,000 in the Nation. Of these 421 reservoirs, 151 are used primarily for water supply.

Assuming that the useful life of the average reservoir is ended when 80 percent of its original capacity is gone, and projecting into the future a uniform silting rate based on past performance, it is possible to analyze the data from the 151 water-supply reservoirs and determine the following facts pointing out the seriousness of the silting problem: 21 percent will have a useful life of less than 50 years as a result of silting; another 25 percent will be lost in 50 to 100 years; and only 54 percent will provide enough storage to suffice for present requirements (not the estimated future needs) 100 years hence.²

In a recent study of 22 water-supply reservoirs in the Piedmont of North Carolina, Garin and Forster³ estimated the annual capital loss by silting at \$32,000. An unpublished report by Garin, covering 17 water-supply reservoirs in the Trinity watershed in Texas, has shown an annual sedimentation damage of more than \$100,000. These figures are convincing evidence that the total annual damage over the Nation amounts to millions, possibly tens of millions of dollars.

The measures that can be taken "to safeguard this essential service"—water supply—are fairly well understood, and the means for their execution is rapidly developing as the soil conservation districts program expands. Here and there a beginning is already being made. It is interesting to note the widely separated localities of some of these beginnings.

² The assumption of 80 percent of the original capacity may be too conservative. An investigation by A. N. Garin, economic research division, of 17 water supply reservoirs in the Trinity watershed, Tex., indicated a range from 38 to 85 percent and an average of 60 percent. If it were assumed that 60 percent of the original capacity would terminate the useful life of the average reservoir, then 32 percent of the Nation's water-supply reservoirs would be useless in less than 50 years and another 22 percent in less than 100 years.

³ Garin, A. N., and G. W. Forster: Effect of Soil Erosion on Costs of Public Water Supply in the North Carolina Piedmont. U. S. Soil Conservation Service, SCS-EC-1, 106 pp., illus. 1940.

In the Southeastern Region, the Project Plans Division of the Soil Conservation Service has compiled a list of all reservoirs in existing soil conservation districts, and the Sedimentation Division has assisted in making a record of sedimentation data. These facts have been called to the attention of district conservationists, and requests are now coming in for assistance in studying the needs of various cities for protection of water-supply sources.

In the Upper Mississippi Region, the Chamber of Commerce of Decatur, Ill., together with other business and professional organizations concerned about silting in the municipal Lake Decatur, have given active support to a petition by landowners of Macon County to organize a district to include part of the Lake Decatur watershed.

In the Pacific Southwest a cooperative agreement has been signed by the East Bay Municipal Utilities District of Oakland, Calif., and the Soil Conservation Service to carry out an erosion-control program on the watersheds of Upper San Leandro and San Pablo Reservoirs, located in the hills east of Berkeley. Already considerable tree planting has been done and other forms of conservation work are being carried out.

Widespread interest has been manifest among municipal, water company, and industrial officials in all sections of the country in ways and means of protecting reservoir watersheds. Probably because of the existence of so many other serious erosion problems, officials of the districts and of the Soil Conservation Service have not as yet given close enough thought and attention to the possibilities for cooperation with these interests. For this reason and because of the importance of such cooperation, I am pointing out in the following paragraphs some outstanding factors that might well be weighed and considered by the district governing bodies in formulating their district policies:

The aggregate acreage in reservoir watersheds usually is only a small part of the total acreage within the district. Farmers, road commissions, and other interests may be expected to carry out as much conservation work on these areas as in other parts of the district. Therefore, if those municipalities and corporations concerned with water-supply reservoirs should participate in the conservation program, as they may under the district laws, more complete erosion control could be achieved on the reservoir watersheds than in most other parts of the district. Hence, if reservoir watersheds were given early priority for planning and treatment in the districts program, they would provide compact demonstration areas that

would serve not only to accelerate the adoption of conservation practices by agricultural interests but also to encourage the active support of 15 to 20 percent of the country's population living in towns and cities. Such demonstrations would bring to the towns and cities an understanding of their direct "stake" in, and financial benefit by, the protection of their reservoir watersheds. Surely such support is an objective worth striving for.

A district policy based on the considerations discussed above will require thorough and reliable planning in order that concrete benefits can be shown 5 or 10 years hence through measured reduction in the rate of silting. This planning should include appropriate physical and economic surveys of sedimentation damage, quantitative determination of sediment sources, and development of control measures which without fail will hold back the erosional debris from the reservoir.

The steps in translating such a policy into practice might follow a general pattern, the steps of which are outlined below:

1. The soil conservation districts, with the assistance of the district conservationists, should obtain records of all municipal and industrial surface water-supply sources within their district areas, whether from impounding reservoirs or not. (Form SCS-327, National Reservoir Inventory, which can be obtained through the Sedimentation Division, Soil Conservation Service, Washington, D. C., would be a convenient form to use in recording this information. If there is no reservoir, the sections pertaining to the dam and reservoir could be omitted.)

2. If copies of these records were submitted to the Regional Project Plans Division, the information would permit consideration of arrangements for appropriate sedimentation and economic studies to determine the amount and rate of annual damage and the extent to which the water-supply interests could afford to cooperate for protection of their watersheds.

3. Where it appears that substantial cooperation is justified, the Project Plans Division and the Physical Surveys Division might then develop plans for quantitative measurement of sediment sources in the watersheds. (A study of survey technique is now being made on a sample watershed in the Southeastern Region by the Physical Surveys Division in cooperation with the Sedimentation Division.)

4. If the problem warrants, the district governing body might insist that farm conservation plans be developed to show not only what the farmer can and will do, but also what *should* be done on every acre

of the watershed to achieve the greatest possible reduction in the amount of sediment reaching the reservoir.

5. The water-supply interests should be approached with a definite plan for their cooperation in providing the erosion control measures required for reservoir protection over and above that which the farmer can and will undertake in his own interest. Types of control in which the cooperation of water-supply interests will be particularly useful and beneficial may be enumerated as follows: (1) Planting of gullied slopes, and structural gully control; (2) streambank erosion control and improvement of larger or inter-farm waterways; (3) road erosion control; (4) control of erosion from industrial and mining waste dumps and other nonagricultural sediment sources in watersheds where such conditions exist. Cooperation in these four erosion control measures is especially valuable not only because such work is often outside the scope and means of the individual farmer and other interests, but also because direct reservoir protection can result in the greatest reduction of sediment load.

The time for developing this cooperation of land owners and watershed users who have riparian rights is *now*—in the formative stage of the district's program. Landowners should encourage the participation of water-supply interests for a more complete conservation program, and reservoir owners should lend support to the formation and maintenance of districts as a legal medium for achieving better watershed protection.

A DISTRICT SAVES WATER

(Continued from p. 213)

Mr. Reid is very proud of the groves of trees around his chicken houses and farm home. He thinks small groves ought to be planted throughout the county wherever water can be diverted to the tree sites to assist them in making normal growth. The Central Curry District recently entered into an agreement with the State highway department whereby the two organizations will cooperate in planting trees along county highways.

Mr. Reid is a public-spirited type of man. He has raised and educated a large family. All but the youngest of his seven children have finished high school. Most of them have gone to college. Mr. Reid states that he never expects to get rich but has decided to try living instead of trying to make money. He and two grown boys farm the 1,100 acres that they operate. One boy is being called to the army soon.

IT CAN BE DONE

BY TOM DALE¹

THE Dust Bowl has been practically chased out of Baca County, Colo. From 1935 to 1938 this county, one of the largest in the Southern Great Plains, was "infamous" as having more "wild" blow land than any other in the Nation.

Timely rains that came in the fall of 1938 and the springs of 1939 and 1940 have helped, but the rains were not more favorable in this county than in many neighboring ones that continue to blow almost as severely as in 1935 and 1936. The principal reason why the Dust Bowl is fading out of Baca County is that the people have put forth a concerted effort to drive the unwelcome guest from their midst. They, the farmers and landowners, have used the soil conservation districts as a means of establishing cover on the blow land of their county.

Two districts were created in Baca County in 1938. (Districts are named soil erosion districts in Colorado under provisions of the State law.) The Western Baca County Soil Erosion District sprawls over approximately half the county and covers about 850,000 acres, while the Southeastern Baca Soil Erosion District covers some 400,000 acres. Of course, these districts have had assistance in whipping the Dust Bowl. The A. A. A., the Farm Security Administration, the Soil Conservation Service, the State extension service, and various other agencies have helped them. But the important thing is that these districts are local governmental units controlled and operated by local farmers and landowners, through which Federal and State agencies can work on a unified program.

During the 6 years from 1932 to 1938 it would have been difficult to find in the United States any area of similar size where agricultural prospects looked more discouraging than in Baca County. At the end of that period only 650 farm families remained out of the 1,730 living in the county in 1930. Rainfall, normally 13 to 15 inches for the county, was subnormal for each of the 7 years 1932-38—the bad dust storms started early in 1934.

As one farmer said: "It was a bad year in 1934. The dust started blowing in the early spring and it hardly missed a day all summer long."

In 1935 the dust storms were worse and the "black rollers," for which Baca County is noted, came that spring. The next 2 years were no better. By 1938

the black rollers were becoming fewer but nevertheless the dust continued to blow. At that time it was estimated that there were 175,000 acres within the boundaries of the two districts on which not a sprig of vegetation of any type was growing. Weeds couldn't grow because the sifting dust and sand cut the small plants off as soon as they had emerged from the ground.

Today there is a different story to tell—soil conservation district supervisors report that only 20,000 acres will be subject to blowing in the spring of 1941. This is good news, and here is the story of what happened to change the prospects of farmers in this southeastern corner of Colorado:

In 1935 the Soil Conservation Service established a demonstration project in the southern part of Baca County and during the same year a soil conservation C. C. C. camp was located at Springfield, the county seat. The Farm Security Administration included wind erosion control as a part of its program. The county agent did his best. The A. A. A. changed its crop control payments to soil conservation payments. All these—but still the dust continued to blow on an increasing acreage.

Early in 1938 the Department of Agriculture established a submarginal land purchase project in the western part of the county. It was at this stage that the farmers and landowners residing in the county took advantage of the soil conservation districts law of the State and organized their districts.

By the time these districts were organized, the Soil Conservation Service had been demonstrating erosion control practices to farmers of Baca County for 3 years. A demonstration of what to do to stop wind erosion is not of much value, however, to a section of bare land in Colorado, the owner of which lives in Connecticut or California and on which no tenant resides. The land itself won't put soil conservation practices into effect—not in Baca County. The problem of bringing under control the idle, abandoned land was one of the chief worries of the supervisors of the two districts. Lack of finances to expend on soil conservation practices on the part of most resident farmers, who had not had a crop in 7 years, contributed to the difficulty of the problem.

The supervisors of the two districts worked hard in drawing up work programs and plans for a permanent system of agriculture for their communities. The immediate and pressing problem confronting them, however, was not the establishment of a long-

¹ Chief, regional division of information, Southern Great Plains Region, Soil Conservation Service, Amarillo, Tex.



time program of soil and water conservation by farmer members of the districts; because it simply couldn't be done in Baca County while thousands of acres of wild land were blowing 5 or 6 months out of the year and depositing loads of unproductive silt on the cropland of those who were attempting to farm. The idle land—land abandoned by the 970 families that had left Baca County, had to be brought under control before those who remained could farm their land.

In April 1938, the Department of Agriculture, under terms of its submarginal land purchase program began to take options on some of the most severely eroded land of the county. In the fall of that same year the Western Baca County District leased 11,000 acres of land that was owned by absentee owners and had been lying idle for several years. They used emergency tillage methods during the winter and spring to stop blowing on this acreage.

The next spring, 1939, the Western Baca District leased 56,000 acres and planted cover crops of broom-corn, Sudan grass, cane, and other erosion- and drought-resistant sorghums on it. They financed these operations with loans from the Farm Security Administration, secured by the A. A. A. soil conservation payments that were due on the land. The leases that were given the supervisors by landowners were for the nominal sum of \$1 per year per farm and included the rights to all A. A. A. payments on the land. When the A. A. A. payments were made, the supervisors found that they had enough money to repay the loans from the Farm Security Administration and retain a small operating capital in the district treasury. The Soil Conservation Service furnished them some equipment and technical assistance in running contour lines. In the meantime, the Service planted cover crops on several thousand acres that the Government had bought.

The Southeastern Baca Soil Erosion District also began to lease land and plant cover crops on it in 1939. In the spring of 1940 the Western Baca District leased some 30,000 acres on which they planted sorghum crops while the southeastern district leased some 15,000 acres and treated it in a similar manner. Indi-

A typical field leased by supervisors of Western Baca County Soil Erosion District. Above, the field as leased in November 1938. The supervisors that fall instituted emergency tillage measures, and in the following spring planted the field to a cover crop of sorghums. Below, the same field in September 1940, after the second year's growth of crops. Approximately 60,000 acres of land have been stabilized by the district; another 15,000 acres have been treated by the Southeastern Baca District.

vidual farmers of the county also began to lease neighboring blow land and bring it under control.

In the spring of 1939, for the first time in 6 years, the amount of land subject to severe wind erosion decreased in Baca County. It decreased again in 1940. In fact, very little really "wild" blow land remained in the districts by midsummer of 1940.

The supervisors of the two Baca County districts realized, however, that the leasing of land and establishment of a cover of sorghums and weeds on it was not a permanent solution to the problem. This was merely a temporary, emergency measure.

In order to accomplish their ultimate objective they felt that a permanent program of soil and water conservation must be established on all of the land in the districts. This meant conserving water by terraces, contour tillage, strip cropping, contour furrows, and all other means. It also meant better crop management; the getting away from cash-crop wheat farming and returning to a livestock economy with sorghum feed crops as the principal cultivated plants. As Sam Gordon, chairman of the board of supervisors of the Southeast Baca District, said, "Any man who attempts to make a living in this country by straight wheat farming will eventually go broke."

Realizing that they must protect their gains if ever they were to establish a permanent program, the supervisors of both districts found it desirable to put to a vote of the landowners and farmers, in their respective districts, the proposition of compulsory land-use regulations. The principal regulation, passed by these districts, was that sod land cannot be broken out without the supervisors' consent. The supervisors give their permission for the plowing up of grassland in Baca County only when it can be shown that the land is suitable for cultivation. Not much land of this type remains unbroken in the county, so in substance the regulation means that there will be very little sod breaking in the future. By applying these regulations the supervisors prevented the breaking out of 1,280 acres of sod land in 1940.

In drawing up the district programs it was found that most of the farms of Baca County were too small

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View on a tract of land in western Baca County that was purchased by the government under provisions of the submarginal land purchase program of the Soil Conservation Service. The farmstead in the upper picture is as it appeared when bought in May 1940. The lower picture is of the same scene in September 1940 after a cover crop of sorghums had been grown as anchorage against wind erosion. This land is to be retired to grass.



COLORED LAND-USE MAPS GUIDE FARMERS

BY WALTER W. JOHN¹

"THE colors on those maps told me how to handle my land better than anything else I've seen," said Arnold Ellinghuysen, as he explained the farm plan he had worked out with the Rollingstone-Stockton-Gilmore Creek Soil Conservation District in Winona County, Minn. He was referring to the colored land-use capability maps which he had made with the help of the district.

"It is easy to see what each color means; the plow shows me where yellow land leaves off and red land begins, just as it is on the map. Now I know what they mean when they talk about land classes," he added.

Arnold and his 16-year-old son, Kenneth, are operating 273 acres owned by an insurance company on a share lease. The farm was purchased by his grandfather in 1865 and was owned by his family until a few years ago when the insurance company took it over.

The cropland stretches along a narrow ridge surrounded by steeply sloping wooded ravines. Strip cropping and contour farming suit the farm ideally, and the operator says he would not farm any other way now. About half the farm was in cropland, but that has been reduced to about 90 acres. Contour fences are being built to separate the pasture from woodland on one side and cropland on the other.

Kenneth, already an "A-1" conservationist, told what contour farming means to them. "Last summer our neighbors, who plowed the old way, could get in

their fields a day or two sooner than we could, but they didn't harvest a crop equal to ours. We got 55 bushels of corn to the acre last year; we raised more on 10 acres than we used to on 30 acres. I plowed 20 acres myself; it's easier than the other way."

The boy explained the pasture system they were following. "We now have three pastures under our conservation plan. We'll put the cows on one for 2 weeks and then change to another. We're cutting down on corn and hogs and are growing more hay. In that way we can spend more time taking care of our cows."

The Ellinghuysen dairy herd now consists of 26 cows, mostly Holsteins. The two farmers plan to enlarge the dairy barn and increase the herd to about 40 cows. Kenneth is taking a keen interest in improving the dairy herd, just as he is in improving the land. He said that he had not studied conservation in the nearby grade school, but he believes "they'll all need to learn about it some time."

Arnold Ellinghuysen is proud of the "kid" and of his younger son and three daughters. There are several Ellinghuysens in the Rollingstone-Stockton-Gilmore Creek district and most of them are cooperating with the district. Arnold said that the group-planning meetings held by the district convinced him of the need of protecting the land.

Arnold wants to buy the farm, but he and the owner have not been able thus far to agree on the price. "The trouble is," he remarked, "after I build up the soil the owner may decide it's worth more money."

¹ Associate information specialist, regional division of information, Upper Mississippi Region, Soil Conservation Service, Milwaukee, Wis.

NEW HOPE FOR AN OLD FARM

BY WALTER W. JOHN

WHEN 6 years ago Harold Neverdahl moved to his father's farm in Dunn County, Wis., he found that it wasn't the farm it used to be. Today, after his first year of "level" farming, he has hopes of saving it from erosion.

Neverdahl, now in his early thirties, told of having helped his father harvest some good crops from the 94-acre farm. "One year Dad got 1,300 bushels of grain, and even sold some hay, but we can't do that now. Something has gone out of this land. We have let the soil get away from us. I believe we just

didn't know what was happening until it was almost too late."

It looked like a losing struggle, but this farmer did not "take it sitting down." Across the creek he saw his neighbor, Emil Jensen, applying soil conservation practices with much success. Jensen was getting some assistance from the C. C. C. camp at Menomonie. When Dunn County farmers organized a soil conservation district, early in 1940, Harold Neverdahl decided to see what could be done to "put the old farm back in shape."

He called on district technicians to advise him about farming on the contour. A technician helped him lay out contour lines for strips on one field which he plowed out in June. These contour lines proved the value of conservation to him and with the plan he worked out, using the contours as a beginning, he now thinks he can stop most of the wash on his cultivated land within 2 years. Next year he will have all of it contoured and strip-cropped in a 4-year rotation of corn, oats, and alfalfa.

The farm drains in four directions and large gullies are cutting in from each side. One gully, more than 20 feet deep, was advancing about 10 feet a year toward his barn and was getting dangerously close. The farmer built a small diversion dam to head it in another direction. He stopped a smaller gully by planting trees in it. The biggest gullies still have him worried.

"If I can get help to stop these big ditches, I want to buy the farm," Neverdahl said. The land has been in the family almost a hundred years, and the home

tie is strong.

Young Neverdahl operates the farm on a crop-share lease with his father, Albert. Although economists probably would not class the 94-acre farm as an "economic unit," the operator thinks he can make it pay through his herd of 20 grade cows. Most of the farm is on rather steeply sloping land, some as much as 18 percent, and mainly "blue" land. Under the present plan, 35 acres are in rotation, 28 acres in pasture, and 23 acres in timber. He may increase the acreage of hay as a substitute for corn silage.

Neverdahl believes that Dunn County farmers can solve most of their erosion problems by farming on the level. "It keeps the soil from washing and makes it work better. There's more moisture for crops. Plowing is easier, too," he said.

In addition to being a cooperator with the soil conservation district, Harold Neverdahl also is a township A. A. A. committeeman. With his conservation program and assistance from the district and the A. A. A., he intends to "make a go of the farm."

NEW HAMPSHIRE NEEDS DISTRICT LAW

(Continued from p. 227)

return for carrying through recommended practices and plans. It means the coordinating of the efforts of public agencies concerned with these problems in order to accomplish the greatest good with the minimum of cost. Such assistance and subsidies to the landowners would compensate for increased labor and expenses involved in making corrections in the management of land that may or may not directly benefit the owners. As landowners reach a point in their thinking where they realize that land-use regulations must be applied for the good of all, although such regulations may appear to be to the immediate disadvantage of a few, they should have available the legal machinery to accomplish such an objective.

Because of the many land-use problems confronting the people of New Hampshire, it is believed that a soil conservation districts law would provide the machinery, so that the people can make the necessary corrections in the democratic way. Certainly, forest and other land-use regulations, applied to private lands, will be most effective when the people involved have full opportunity to discuss, frame, and decide upon the regulatory measures best adapted to an area. It is important, also, to remember that any regulations applied to farm lands and woodlands within a region, are related to, and affect the use of all the land. Consequently, forest management cannot be considered as a problem by itself, but needs to be coordinated with the land-use problems of an entire area. If in the

future the Federal Government should see fit to place upon all woodland owners the responsibility of keeping their woodlands productive, New Hampshire people through a soil and forest conservation districts law would have the needed legal machinery for assuming such a responsibility.

IT CAN BE DONE

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for practical livestock farming units. Hence, the districts are cooperating with the Farm Security Administration, the Soil Conservation Service, and the Extension Service in attempting to enlarge the average-sized farm of the county. This they call their "unit reorganization program."

J. H. Neal, chairman of the board of supervisors of the Western Baca County District, made this statement: "Since we have brought most of the abandoned land under control, farming of the other land should be much simpler. Some of the better land that has been idle and abandoned for several years was farmed again this year and several new farm families have recently moved into the county."

SOON TO BE PUBLISHED

Do soil conservation practices pay? In an early issue SOIL CONSERVATION will present convincing evidence drawn from the well-kept books of farmers with several years of conservation experience.—Editor.

A BANKER'S FOURFOLD OBLIGATION

BY W. JUDD WYATT¹



Clyde S. Branaman, Bedford, Ind., combines membership in a national farm loan association with soil conservation farming. Wheat harvested from the strips shown in the picture yielded from 5 to 10 bushels per acre higher than the field had ever produced previously.

EROSION is amortization in reverse. The close relationship that exists today between the purposes and activities of the Soil Conservation Service and those of the Farm Credit Administration has been built up, with careful attention to local and individual farm needs, in order to forward without delay a specific type of coordinated assistance to the people who work the land. While the Soil Conservation Service is showing farmers how to stop the tearing-down process of erosion, the Farm Credit Administration is showing them how they can build up their equities or their share in the ownership of their farms and farm homes. At the same time the Farm Credit Administration is advising members of national farm loan associations and production credit associations of the necessity for conservation farming.

The oldest of the four cooperative credit units of the Farm Credit Administration is the Federal land bank system, which since 1917 has provided farmers with long-term farm mortgage loans. Because of their low interest rate and long terms—sometimes as long as 34 years—Federal land bank loans meet a definite need in the advancement of American agriculture. However, another factor is largely responsible for fitting land bank loans to farm needs. That factor is amortization, a provision enabling a farmer to make small but regular payments on the principal of his loan.

In other words, a family with a Federal land bank loan uses amortized payments to build up a larger share in the ownership of the farm. Payment by payment, year by year, a reserve security is stored away and the equity in the farm business and farm home is increased. Each amortized payment on a



R. O. Cole, extension soil conservationist, Purdue University, has an interested audience of national farm loan association members as he speaks on the advantages of conservation farming.

Federal land bank loan builds toward a happier future.

The one characteristic of farm families that has stood out above all others, throughout the nearly a quarter of a century of Federal land bank mortgage loan operations, is their desire and determination to meet obligations and to own their farms and homes free of debt. The same period of time has also demonstrated most pointedly the necessity for farm planning and cultivation practices that will stop erosion losses while the amortized payments are increasing the farmer's equity in his farm. By working side by side the Soil Conservation Service and the Federal land banks are helping farmers to improve farm value through conservation farming while at the same time they pay for their farm.

The use of credit in the purchase of a farm or in making farm improvements is recognized as a good business practice. Industry uses credit and enjoys credit terms adapted to its needs. Prior to the establishment of the Federal land bank system, farmers were forced to use credit on terms suited to industry. The farmer who has a short-term farm mortgage loan that falls due in a lump sum is forced to follow a cropping system that lays his farm prey to the ravages of erosion and the evils of over-cropping. Even if, by pushing his farm to the limit, he is able to meet his short-term obligations,

¹ Information agent, Farm Credit Administration, Louisville, Ky.

he still faces the ordeal of several years in which he must rebuild his soil. The terms of a Federal land bank loan, on the other hand, are so designed that a farmer can plan his erosion control and soil conservation practices over a long period of years, and thus he is, throughout those years, in a much better position to follow through with his plan to put his land into the best possible condition for permanent and profitable use.

Thousands of farmers who have obtained Federal land bank loans through local cooperative national farm loan associations are cooperating in the program of the Soil Conservation Service. They have found that erosion control practices have increased yields and efficiency of production. In many instances tenants who had had the experience of operating farms within Soil Conservation Service demonstration project areas, immediately upon buying farms of their own, began using soil conservation methods with the aid of Federal land bank loans.

To acquaint national farm loan association members in the Ohio Valley with the fact that something can be done to control erosion losses, the Federal Land Bank of Louisville has joined with national farm loan associations, the Soil Conservation Service, and the Extension Service in sponsoring tours of soil conservation demonstration farms and areas. Many of these cooperative tours have been held in Indiana and Ohio, and they are now being extended to Kentucky and Tennessee. The Federal land bank has urged association officers and members to assist in Soil Conservation

Service district programs to the greatest possible extent.

In encouraging the adoption of soil conservation practices the Federal land bank recognizes a four-fold responsibility. One, and an extremely important one, may be summed up by saying that the land bank wants the farmer to be the owner of a profitable and permanent farm when the last payment on his loan is made. A second responsibility is to bondholders, in the protection of the soil which is the security back of the bonds—this since funds for Federal land bank loans are obtained from the sale of bonds to investors. Still another responsibility is to consumers, who are entitled to the assurance of continued supplies of food and fiber. The fourth and final responsibility is to future generations of the Nation; these people of the future have their rights even today, that we shall pass on to them the advantages of the cooperative credit system and the security of land that has been well cared for and in a high state of productivity.



John F. Hull, assistant general agent of the Farm Credit Administration, Louisville, here explains the advantages of soil conservation districts. Mr. Hull, until recent months county agent of Vanderburgh County, was instrumental in the organization of Indiana's first soil conservation district.

ONCE-IN-HUNDRED-YEARS RAIN

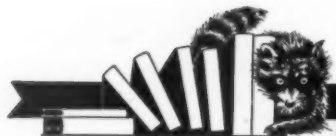
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strips developed on the site of former gullies will themselves repay them for all their labor. The rains we had in August demonstrated both to me and to my tenants the value of a complete water-disposal system, including both properly constructed terraces and meadow strips to take care of the run-off. The meadow strips surprised us all in the way they handled the run-off from the terraced fields. All of my tenants now are in wholehearted sympathy with the work." Mr. Brodie also expressed the opinion that meadow strips and terraces planned for his farm and established within the past year at a cost of less than \$1 per acre had increased the value of his farm to the extent that if sold at auction it would bring \$5 more per acre than before planning was begun.

Thus, in spite of all the damage of rains and floods, farmers in soil-conservation districts in North Carolina are not discouraged. They have a new insight into the need for and the value of a sound conservation program and they are going about the job of

protecting their land with more determination than ever. It may be that such rains come only once in a hundred years, but they are not taking chances.

In connection with district work in the tobacco-producing areas of Virginia and North Carolina, farmers and district technicians have developed a rather unique scheme for crop rotations on tobacco land. On this type of land farmers use the following rotations: 1-year tobacco followed by oats and 2 years of grass, or, tobacco followed by 2 years of grass or grain in strips on the contour. Some of the land in the field where tobacco is grown may not be suitable for tobacco; on such land, corn or cotton is planted in the same strip as tobacco, followed by grain, grass or a legume, thus permitting clean cultivation around the slope in the cultivated strip of clean-tilled crops and harvesting of the close-growing crops in the same strip. The development of this scheme provides the farmer with a safe and sound way of using all the land within a given field, with ease as to cultural operations.



BOOK REVIEWS AND ABSTRACTS

by Phoebe O'Neill Faris

CONSERVATION OF AMERICAN RESOURCES. By Charles N. Elliott. Edited by Paul W. Chapman, Dean of the College of Agriculture, University of Georgia, Atlanta, Ga. November 1940.

This new 700-page text, or reader, for public schools, is fairly complete without being too involved and is so interesting that it is hard to put it aside once you have picked it up. It is so profusely illustrated that the person accustomed to scrutinizing and analyzing many books is moved to make a count—there are 315 illustrations.

Certain features are handled unusually well. Interest—the author incites interest, then captures it, by devices entirely legitimate. Children love animals and animal stories—wildlife is the first American resource treated as a “unit.” Forests are next; and then the land, the soils, by which wildlife live and in which great trees are rooted.

A second unusual feature of the book is the honor code method used by the author to appeal to the pride of American youth in an abundant land and at the same time enlist their support in a broad program to restore and preserve all resources—birds and animals, fish, forests, soils and waters, farm and range lands, minerals, landscapes and homes and communities. Honor codes not only train in “playing fair” with the land and the waters, the forests and wildlife; they introduce activities and organizations in which young people can participate to hasten restoration and “make fast” good habits and policies of conservation.

The “50 conservation messages, which come from America’s conservation leaders” constitute another unique and valuable method used in this new textbook. Appropriately placed throughout the volume, these messages, many of which were written especially for the children who will study the text, introduce to the conservationists of tomorrow those great leaders of today who in their highly specialized fields are refining and perfecting conservation means and methods and at the same time working wholeheartedly to correlate knowledge and hasten the trend toward a lasting conservation policy for America. This “message” device, bolstered by photographs of those from whom the messages come, is most effective in that it fits so well the purpose of a conservation course in public schools. The 50 names constitute a most impressive list: It begins with Jay N. Darling; you find along the way H. H. Bennett, W. C. Lowdermilk, Russell Lord, under the “unit” Land; Herbert Hoover, Zane Grey, Stuart Chase, F. A. Silcox, Paul B. Sears, Ovid Butler—but the list is too long for this space. It ends with John W. Studebaker, U. S. Commissioner of Education. The book is dedicated to these 50 leaders.

Paul W. Chapman, editor, and dean of the College of Agriculture of the University of Georgia, has written the Foreword. He points out certain features of the book in the hope “that teachers and pupils will make use of these sources of information”—the glossary of “conservation words,” the extensive lists of “readings in conservation” arranged to conform with the organization of the text. Other very useful lists for teachers and students are included also. It is more or less a certainty that these sources of information are going to be used.

WORKING PLANS FOR PERMANENT FARMS. By Glenn K. Rule, Soil Conservation Service. United States Department of Agriculture Miscellaneous Publication No. 411. Washington, D. C. October 1940.

Probably the best method of getting the most out of the working type of bulletin is to outline as you read. This bulletin on working plans for permanent farms resolves itself into seven steps of planning. First, find out the existing facts about the farm—the soils, steepness of slopes, extent of erosion, present land use, and the climatic factors such as rainfall, temperatures and wind direction and velocity. In this first step the farmer’s help is essential, since he knows more about the land he works than any other person could possibly know. Second, make a use-capability map. As Mr. Rule defines it a use-capability map is “an interpretation of the pertinent physical facts about a given piece of land as these facts relate to its practical use.” Three land-use capability maps are shown, in colors, and finished farm plans matching them, so that the user of “Working Plans for Permanent Farms” can have no doubt as to their meaning and value. As a matter of fact, in this bulletin is to be found the best account of this phase of planning that the reviewer has seen anywhere.

The third step: Consider, from all angles, the economics of the farm—the farmer’s resources and needs. Obviously, no one other than the farmer can provide the information required here. He knows his past years of labor and what he has realized from that labor; he knows his essential requirements in the matter of income and feed and food supplies. These requirements are given careful thought and attention, along with all other known facts, in the fourth step—the making of a preliminary working plan for the farm, something to use as a basis for discussion of land use as related to production and conservation of the soils.

The fifth step brings into the picture the element of cooperation among several or many farmers whose lands adjoin to make a block that can be handled economically for production, for conservation of the soil, and for permanence of the farm as an institution. Group meetings are held, and the farmers talk it out, with their use-capability maps and their preliminary plans and recommendations before them. Then, and this is the sixth step, each farmer makes his own working plan, with a technician’s help if such help is wanted, on the land of his own farm.

The seventh step involves the completed individual farm plans based on all known facts concerning the area of land and the people who use the land as a source of livelihood. The completed farm plan consists of five parts: the land-use capability map; a land-use map; a plan of operations; a job sheet sequence; an organization summary.

The latter half of the bulletin is given over to three sample farms, one in the Piedmont of the Southeast, one in the Texas Panhandle, and the third in southeastern Minnesota near the Mississippi River. The discussion of these farms is especially valuable in that it explains the details of land-use change required on so many farms for conservation of the land itself.